DOCUMENT RESUME

ED 187 902 CE 025 566

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TITLE	Identification and Validation of Criteria for Determining When Competency of Handicapped Persons Is Better Developed On-the-Job and When It Is Better Developed in a Formal Technical Course. Report of Phase I.
INSTITUTION	Illinois Univ., Urbana. Bureau of Educational Research.
SPONS AGENCY	Illinois State Office of Education, Springfield. Div. of Adult Vocational and Technical Education.
PUB DATE	Jul 79
CONTRACT	RD1-A9-164
NOTE	159p.
EDRS PRICE	MF01/PC07 Plus Postage.
DESCRIPTORS	Competence; *Criteria; *Disabilities; Employer Attitudes; Interviews; Job Skills; *Off the Job Training; *On the Job Training; Postsecondary Education; Secondary Education; *Training Methods; *Vocational Education; Vocational Schools
IDENTIFIERS	Illinois

ABSTRACT

The intent of this study was to address the process of selection of an appropriate training setting based upon criteria being used by employers and educators in Illinois who plan for the vocational education of handicapped persons. Study 1, a pretest of the questionnaire, quantified the criteria for determining the better approach for training handicapped trainees. Study 2, the pilot of the study, determined what criteria were being used for determining which method of training was appropriate for various conditions and levels of handicap. The study determined that the twenty-four criteria reported by Evans et al. appear to apply to programs for training persons with handicaps, but that a twenty-fifth criterion needs to be added--evaluation of training. The criteria included those that were institution related (5), quality and speed related (4), competency related (6), trainee related (5), and other (4). The preferred training was a combination of classroom/laboratory and on-the-job training. (Appendixes, amounting to approximately two-thirds of the report, include an extract of the Evans et al. twenty-four criteria and survey forms.) (YLB)

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IDENTIFICATION AND VALIDATION OF CRITERIA FOR DETERMINING WHEN COMPETENCY OF HANDICAPPED PERSONS IS BETTER DEVELOPED ON-THE-JOB AND WHEN IT IS BETTER DEVELOPED IN A FORMAL TECHNICAL COURSE

Report of Phase I

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July 1979

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CE 025 586

PREFACE

This report presents information on accomplishments of the first phase of the research project: "Identification And Validation Of Criteria For Determining When Competency Of Handicapped Persons Is Better Developed On-The-Job And When It Is Better Developed In A Formal Technical Course" in Illinois. Phase I has involved: a) the administration of the modified Delphi technique to respondents who were obtained by means of a referral sampling from the local community, b) the design of an instrument to quantify the data collected, and c) the conduct of a pretest (Study 1) and pilot (Study 2) to evaluate the operational, statistical, and analytical procedures with a wide variety of agencies in the State of Illinois.

This report provides information on project progress up to June 30, 1979. Future reports will be an interim and final report of Phase II and an amalgamated final report (inclusive of Phase III) of the project.

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I. INTRODUCTION

The seventies have included substantial federal legislation mandating equitable vocational training and employment opportunities for handicapped persons. The message conveyed to educators is threefold; first, vocational education must be available to all persons who can benefit from it; second, these vocational education opportunities must be put in priority order according to the needs of the individual person; and finally, the education must be provided in the least restrictive setting. While the message is clear, the educator questions which methods will provide the necessary vocational education services (Carlson, 1978). The most reasonable sources for answers to this very difficult question may come from the combined efforts of the two branches of education which have had the most experience with handicapped persons--vocational education and special education. Indeed, vocational and special education researchers have already begun investigating specific problems whose individual solutions have bearing on the larger issue (Albright, Fabac & Evans, 1978; Bellamy, Peterson, & Close, 1975; Brolin, 1976). Several innovative approaches to vocational education of the handicapped have developed because of the efforts of these separate investigators. Unfortunately, widespread practical applications of research findings generally have a lag of several years. Consequently, most educators in the field are still providing more traditional vocational education when new, more improved methods are available.

As opportunities for training and education continue to be supported, interest in which training method "best equips" the handicapped person will continue to grow. Traditionally, vocational competencies have been taught

on-the-job or in a formal classroom or laboratory setting, however, the trend in recent years has been to teach more vocational competencies in classroom or laboratory settings. Consequently, enrollments in vocational programs operated by public schools, colleges, and proprietary schools; by private profit and nonprofit agencies; and by industries have been expanding.

Those who plan vocational programs usually have a choice between these two alternate training approaches. Essentially, vocational schools may use laboratories, classrooms, and/or on-the-job training methods in the school or in places of employment (through cooperative education), while large employers may use either laboratories and classrooms, or training in an on-the-job work setting. If a choice is not available, trainers do the best they can with what they have. If a choice is available, the selection of the training setting becomes significant because the choice of the wrong training setting can be costly in time, money, and personal dissatisfaction.

The intent of this study was to address the process of selection of an appropriate training setting based upon criteria being used by employers and educators in the State of Illinois who plan for the vocational education of handicapped persons. The collection of such information was seen to be important in light of the conglomeration of existing alternatives. It was hoped that the information collected would specifically answer three primary questions: 1) what criteria are currently used for deciding if handicapped persons are best taught a skill on-the-job or in a classroom/laboratory setting, 2) how do these criteria vary with type and severity of handicap, and 3) how should these criteria and the use of these criteria be modified to increase student competency and aid advancement throughout the continuum

leading to employment and promotion for the handicapped workers? Answers to these questions should markedly improve the efficiency of vocational education for the handicapped client and should have almost immediate impact in their training, since most administrators of educational/vocational programs for persons with handicaps are seeking guidance as to the more effective ways to proceed in program development. In addition, if trends can be identified empirically and compared to the relative effectiveness of surveyed programs, results from this study may provide the educational community the data necessary to develop a coordinated advance toward a solution related to how better to vocationally serve the handicapped person.

II. DEFINITION OF CRITERIA AND RELATED LITERATURE

It would appear that the mildly handicapped person who has a relatively high potential for competitive employment can be mainstreamed into the existing continuum of training alternatives with little or no deleterious effect. A major question facing educators and employers, today, is how to choose among the available training settings and how to design more effective, new programs for the moderately and severely handicapped person. These persons are beginning to receive prevocational training, but the ways in which they should be trained are relatively unexplored. The selection of a particular training method, whether it be on-the-job training, classroom/laboratory training or a combination of the two methods, is made from a consideration of certain criteria. The criteria used in this study were derived from Evans, Holter and Stern (1976). These criteria were, in turn, further developed from a review of selected literature and consultation with occupational educators in military, industrial and academic institutions (see Appendix A).

Evans, Holter and Stern identified twenty-four criteria used by schools and employers to determine which training setting to use with nonhandicapped students. Because the students were not handicapped it is not known whether the criteria for nonhandicapped persons are applicable to handicapped persons. It would appear that additional information is necessary to increase training program effectiveness when training students with handicaps.

In the following section some of the criteria examined in this investigation are defined and briefly discussed. These criteria are grouped into five categories: 1) institution related, 2) quantity and speed related, 3) job related, 4) trainee related, and 5) other criteria. Institution related

criteria included cost, capability, philosophy and policy, availability/ suitability of physical resources and reality of atmosphere. Quantity and speed related criteria included number of trained personnel required, persistence of demand for trained personnel, need to minimize training time and state of the business cycle. The job related criteria were composed of frequency, criticality, uniformity, complexity, quality control and instrumentality. Trainee related criteria were prior experience, abilities and aptitudes, disabilities, preferred learning modes and judgement of performance of graduates. Other criteria included in this investigation included ports of entry, screening devices, passage of time, history and pragmatism and evaluation of training.

Institution Related Criteria

Costs. Cost is a key criterion in determining how and where a skill should be taught. Most other criteria have an impact on costs of instruction, and all criteria affect total costs (Evans et al.). The facilities, personnel, resources, materials, equipment, and quality of graduates are usually judged in relation to the cost of the training program. Cost is therefore important when considering the advantages and/or disadvantages of bringing the trainee to the classroom or laboratory, the instruction to the trainee on-the-job, or combining of the two methods of instruction (McNelly & Kazanas, 1975; Samers, Dunham & Nordhauser, 1974).

Capability. Capability of a training organization may be defined as the maximum number of personnel who can be in training at any point in time without causing "unacceptable" degradation in the quality of graduate skills and/or without causing "unacceptable" loss in productivity in the

case of on-the-job training (ASTD, 1972). In this definition it was assumed there is often a nearly constant relationship between the number of instructors and the number of trainees in a given training environment. For example, in a classroom/laboratory environment, one instructor may be required for each twenty trainees.

An assumption could be made that the capability to conduct on-the-job training is based on the equation: capability is directly proportional to the number of qualified instructors, but this assumption is acceptable with reservations and within limits (Gollay & Bensberg, 1978). The trainee/instructor ratio for on-the-job training is usually considerably lower than for the classroom/laboratory. The number of skilled persons in the work environment usually does not increase with an increase in the on-the-job training load. Indeed, skilled workers may be replaced by unskilled trainees, when the total number of employees is held constant. Small operational units can only have a few qualified skilled workers assisting the trainees. But, the majority of the qualified workers must produce goods or services, or there could be an unacceptable loss in productivity. Furthermore, a skilled worker is not always a capable on-the-job training instructor who is willing to demonstrate the critical skills to a trainee.

Philosophy and Policy. Traditionally, the choice of an instructional methodology has been determined primarily by philosophical beliefs, past experiences, fads of the time, or most often: because it seemed to work (O'Toole, 1976). The decision to select one type of instruction in preference to another has usually been based on the judgement of the curriculum developers who frequently have relied on past experience for determining which method should be used at the time a course is developed (Singer, 1977). Moreover, if the administrators are skeptical about the

efficacy of a particular procedure for training, that procedure will be used less often; when it is used, it is likely to be less effective because many of those involved will expect it not to succeed. Empirical data on the conditions under which particular types of training are more successful can, of course, be influential in modifying preconceived ideas.

Availability/Suitability of Physical Resources. Ideally, trainees for any occupation should acquire new skills under conditions and with equipment which are identical to those they will encounter on-the-job regardless of the method of training used (Evans et al.). However, the use of actual job conditions is not always feasible and substitute conditions are required to bridge the gap between training and job performance. (Practical considerations usually dictate the use of substitutes instead of actual equipment and facilities. Most frequently, these considerations are: 1) cost, 2) safety, and 3) availability of resources.)

Reality of Atmosphere. Regarding this criterion, Evans et al. questions how one felt about shift work, having to do work on holidays, working high off the ground, and responding to pressures of too little time and too many demands. These work setting factors are difficult to create off the job. These are difficult reality problems that educators and employers must consider in developing attitudes and standards of behavior that may improve the technical skills of persons with handicaps.

Quantity and Speed Related Criteria

Number of Personnel to be Trained. The number of personnel to be trained is an important criterion to be considered by the planners of training programs for handicapped persons (Walker, 1965). Many factors are related

to this criterion. For example, requirements for the number of instructors in classroom/laboratory courses are directly related to the number of trainees. When the flow of trainees through a classroom/laboratory course is large, factors such as trainee and instructor time, use of equipment, materials and facilitites are cost-effective elements. When the flow of trainees through the course is small, however, these factors may lead to cost disadvantages because the school may require a relatively fixed administrative staff with concomitant facilities to house and supply administrative functions. Conversely, on-the-job training may effectively handle a small load of trainees without an adverse impact on productivity. Work performed by the trainee while learning may tend to offset loss of productivity by the instructor (O'Toole, 1976). However, the cost advantage for on-the-job training may disappear when subjected to large numbers of trainees. Under these circumstances instructor manpower requirements could become inordinately large and cause a strain on the ability of units to maintain the necessary level of productivity.

Persistence of Demand for Trained Personnel. A long-term job requirement for trained workers, including handicapped workers, may influence the use of one training approach over another. For example, when trainees are available over an extended period of time, program developers may justify the acquisition of facilities, equipment, and staff to support the implementation of classroom/laboratory courses. Conversely, as stated by Evans et al., if a job classification is going to be phased out, or a product is going to be discontinued so that new entrants for an occupation will be needed for only a year or two, the construction of facilities and

the development of curricula for residential or other classroom/laboratory training may be impractical. The requirement for trained personnel may, in those situations, be satisfied through on-the-job training.

Need to Minimize Training Time. In many instances there is a need to minimize training time. This may occur for any number of reasons with the most persuasive reason most often being that the demand for trained personnel far exceeds the supply. The need to minimize time is directly related to cost factors and the complexity of the skills being learned. In the training of the handicapped, the need to minimize training time may be at odds with developing skills at the individual's own pace. Therefore, the training method chosen is important in that it may reflect the amount of time allocated for the training. In the training of the handicapped, the consideration of time to be spent in skill acquisition has always been an issue because it directly affects the cost-benefit ratio of training (Levitan & Taggart, 1977). This criterion then influences other criteria.

State of the Business Cycle. The state of the business cycle refers to the extent to which the economy is able to support full employment for all of those desiring to work. It is particularly important for the training and employment of handicapped workers. Levitan et al. stated, "the health of the economy affects everyone, but the impacts are greatest for the groups in the labor force that are least prepared for or capable of work and least desired by employers" (p. 95). Handicapped workers are just such a group and are placed in the difficult position of competing with nonhandicapped workers for both training and jobs when the economy is depressed.

When the demand for labor is low, employers seldom have either the interest or the financial incentive to provide training. When the need for labor diminishes, on-the-job training and even combinations of on-the-job training and classroom/laboratory training may decline as a viable choice for the training of persons with handicaps. The extent to which the state of the business cycle influences the choices made, of course, depends upon the duration and depth of an economic downturn. In any event, the state of the business cycle, whether up or down, probably affects the choice and selection of the training method to be used for training persons with handicaps.

Job Related Criteria

Frequency. The structure of a training program for handicapped students should begin with a description of the tasks that the entrant will be expected to perform. Tasks that are performed frequently by most job incumbents at a given skill level are prime candidates for inclusion in classroom/laboratory training programs (Carpenter, 1970). Conversely, tasks that are performed by few workers, or infrequently, should be considered for elimination from classroom/laboratory instruction and taught on-the-job, or not taught at all. If the probability of any one worker having to perform a task is very low, it is likely to be more efficient to train on-the-job only those trainees who must perform the task.

The capabilities of handicapped trainees must also be considered regardless of the frequency of the task, when determining when and how skills should be taught (Razeghi & Halloran, 1978). If the trainees have poor retention, it would appear that the task should be taught when and where

the skill can be related immediately to the job. Of course, other factors such as criticality and consequences of inadequate performance must also be considered when determining whether a task performed by few workers should be taught in a classroom/laboratory course, on-the-job, or at all.

Criticality. The consequences of inadequate performance is an important criterion in selecting the course content and the instructional setting. For example, if a task must be accomplished in an emergency and if the probability of being able to perform the task adequately without classroom/laboratory training is low, then the skill may best be acquired in a classroom/laboratory setting. Consequences of task delay may also contribute to criticality (ATC, 1968a; Dahl, 1978). A major question may be how long a job can wait until a trainee locates the proper section in the technical manual or asks a supervisor for critical information. Each task that may involve high rish to personnel, equipment, and/or facilities needs to be evaluated to determine how much emphasis should be given to it and which training medium best develops the required skill. The method of training best suited for teaching critical, complex tasks to handicapped trainees should, therefore, be considered by the decision-makers in the development of the training programs. Tasks which are not complex for most trainees may be very complex for those with severe learning disabilities.

Quality Control. If considerable time is required before a worker can learn to produce work of acceptable quality, on-the-job training may not be feasible for initial instruction. For example: Time for learning is a major reason for the widespread use of vestibule schools in the textile industry (ASTD, 1972). Decision-makers therefore, have an interest in

making the appropriate choices among the skill development sources to insure there is a high degree of probability that the handicapped trainee would learn to produce work of acceptable quality in a reasonable period of time.

Instrumentality. Skills in reading, computing and communicating are difficult to teach on-the-job. Tasks that require basic educational skills, such as reading, writing and arithmetic may be suitable instructional areas for classroom/laboratory instruction. If the tasks are to be taught on-the-job, however, it may be wise to plan for prerelated classroom/laboratory instruction (Evans et al.). Familiarity with specialized knowledge such as chemical, physical and mechanical properties of metal would be generally related to mastery of individual tasks in many metal trade and technical level occupations. The kinds of jobs available to handicapped persons should be analyzed to determine which adjunct skills are necessary for further learning or for adapting to job changes. This analysis is needed to decide which method of training provides the trainee the best opportunity to learn these specialized skills (Bozarth, 1968).

Trainee Related Criteria

Prior Experience. Strongly related to the amount of time a person requires to learn job tasks is the amount of prior experience s/he has had in acquiring job relevant behaviors. The prior experiences may be on the development of specific skills for a specific job or it may be on more generalizable work behavior and knowledge. In either case the method of training chosen would be predicated on the relevance of one's prior experience. Consequently, on-the-job training would more likely be chosen (Evans et al.).

One problem with the use of prior experience as a criterion is that it is often difficult to assess accurately. In addition, many training settings are structured so that little or no evaluation of prior experience is taken into consideration during the learning of job skills (Brolin, 1976b). Although programs have been developed to circumvent this weakness (e.g., The Job Tryout Program), for the most part, the primary concern of training institutions is that trainees learn the necessary job behaviors by completion of previously planned instruction.

Abilities and Aptitudes. The training method used for developing occupational skills has often been determined by the abilities and aptitudes of trainees. Evans et al. reported, "If trainees have abilities and aptitudes which do not differ significantly from the norm, special consideration in the choice of the appropriate instructional setting may not be required" (p. 33). They seem to indicate that the lower the ability and aptitude of a student the more likely the choice of training method would not be a total program of on-the-job training. But the question as to how far abilities and aptitudes can be developed has not been answered. Brolin (b) stated "the retarded have untapped potentials for achieving higher levels of personal, social and occupational functioning than they are presently achieving" (p. 30). Brolin (b) cites several studies which have supported the belief that evaluation of abilities and aptitudes for employment become more stringent as methods of teaching occupational skills improve. Individual case studies of extraordinary development by a handicapped individual of specific aptitude is still an educated guess. This makes difficult the choice of on-the-job training or classroom/laboratory training, according to abilities and aptitudes of the trainees.

Disabilities. It has generally been believed that disabilities, whether mental, physical or emotional, will lead to a greater length of time required to bring a student to the level of competence desired (Evans et al.). "The Social Security Act defines disability...[as] the inability to engage in any substantial gainful activity by reason of any medically determinable physical or mental impairment which can be expected to result in death or has lasted or can be expected to last for a continuous period of not less than 12 months" (Levitan & Taggart, 1977, p. 1). Disability, as related to work has two dimensions; "the presence or perception of physical or mental handicaps and a reduced work capacity" (Levitan et al., p. 1). For most purposes the disability criterion and the abilities and aptitudes criterion can be combined.

Preferred Learning Modes. For some individuals, career satisfaction is related to being able to work and learn on-the-job (Evans et al.). Those individuals may even enter a particular occupation because it affords them this kind of opportunity. Other individuals feel more satisfied when learning in a formal classroom/laboratory setting and, therefore, seek careers in occupations taught mostly off the job. For some occupations, both types of preparatory programs are offered. It has often been a dilemma for vocational counselors to advocate giving the handicapped individual a choice as to how s/he should be trained while in reality directing them into a particular method regardless of preference (Gardner & Warren, 1978). The preferred learning method by the trainee, however, may not be the one most applicable to his/her needs or may not even be available. Nevertheless, the trainee's preference for training on-the-job or in the classroom/laboratory should be taken into consideration when the circumstances permit.

Passage of Time. The time interval between completion of training and the initial performance at work may have an impact on qualitative long-term requirements of the job. A loss of proficiency could result if the time interval is great due to a loss of knowledge and/or skill. Trainees who receive their training on-the-job usually do not experience this loss of job efficiency, particularly if their work is repetitive. The time interval between the completion of on-the-job training and the actual job placement is usually negligible; therefore, the trainees who receive on-the-job training normally do not require retraining because of a loss of potential job entry skills (ATC, 1968b). There may, however, be a time interval between graduation from classroom/laboratory courses and initial performance on-the-job. This criterion may then have an impact on the qualitative requirements because it involves knoweldge and skill retention.

Screening Device. The use of a screening device for both hiring and promotion may be effective for developing a competency. Classroom/laboratory courses may provide opportunities to screen trainees or workers for promotability. Training on-the-job, on the other hand, may be more effective for developing the competency, but may receive the same acceptability as a classroom/laboratory course for promotion. Thus, both employer and worker may prefer classroom/laboratory instruction as a screening device for promotion (Tabbush, 1976). In some careers, school allows time for the completion of security checks and for assessing the reliability of the trainees' performance in difficult situations which arise infrequently on-the-job (Evans et al.).

History and Pragmatism. Educators and employers seldom use empirical data for deciding whether to teach a competence on-the-job or in a classroom/laboratory setting. Both educators and employers usually indicated that they had always done it that way, and it seems to work pretty well (Woodring, 1979). Some employers use their experience in deciding which training method works best in a particular case. If this choice doesn't work well, a decision is often made to make a change.

Evaluation of Training. The twenty-four criteria identified by Evans et al. as having an important bearing on whether or not a particular competency should be taught on-the-job or in a classroom/laboratory setting included one criterion related to the Judgements of Performance of Graduates. The objective of this criterion was to investigate the capability of on-the-job graduates versus classroom/laboratory graduates after completion of their respective training programs. Cited criterion did not address the appraisal of the quality of training during the course of instruction. Therefore it would appear an additional criterion, i.e., formative evaluation of training, should be taken into consideration. For the purpose of this discussion, instructional evaluation is the process of determining the effectiveness of an instructional system, while providing a basis for improving it (Black & Bottenberg, 1970). Objective data should be collected to determine whether graduates meet the qualitative requirements of the job for which they are being trained (USDOAF, 1970a).

Uniformity, Complexity, Judgements of Performance of Graduates, and Ports of Entry were the four criteria that were not re-defined or discussed in this section. The project staff deferred any revision and/or discussion of these four criteria until the close of Phase II of this project.

Summary and Conclusions

Educators as well as employers are searching continuously for answers as to what methods and techniques should be used to most effectively train students and employees. This search becomes more complex when the trainee and worker have handicaps which must be taken into consideration in developing the learning environment.

The twenty-four criteria were found to be useful in analyzing alternative methods of training for the nonhandicapped person and were utilized in the development of this study for handicapped persons. Of major importance is the answer to the general question: "Which, if any, of the criteria are considered or used by the planners of training programs for persons with handicaps?" This study was designed to indicate the "decision-making" criteria that might best be used by administrators, educators, employers, counselors or others when selecting the training setting for handicapped persons. The five categories of criteria, i.e., institution related, quantity and speed related, job related, trainee related, and others, were intended to provide direction for the researchers in conducting this study. The criteria are not to be considered all inclusive, covering all environments and all individuals. However, it is hoped that the twenty-five criteria identified will guide and direct future research in the area of vocational training and employment of the handicapped.

III. METHODOLOGY

This section of the report is divided into descriptions of procedures for two separate studies conducted during the 1978-79 academic year. The "pretest" of the questionnaire (Study 1) sought to quantify the criteria for determining the better approach for training handicapped trainees. Further, Study 1 addressed the possibility of whether additional criteria might be included for determining which method of training was more efficacious for handicapped trainees, i.e., on-the-job training or classroom/laboratory training.

The "pilot" of the study (Study 2) used the instruments developed in Study 1, and attempted to address the questions posed by the larger investigation. Briefly, the purpose was to determine which criteria were being used for determining which method of training was appropriate for various conditions and levels of handicap. Additionally, Study 2 attempted to provide data to aid in the consideration of which criteria should be used to determine method of training.

Study 1

Respondents. Ten respondents were interviewed. These repondents were selected because of their involvement at various levels in prevocational or vocational training programs serving the handicapped in Champaign County, Illinois. Respondents were contacted by telephone and were provided a brief description of the purpose of the study. If the respondents agreed to participate, a one-hour interview was scheduled.

Procedure. Study 1 respondents were interviewed by members of the project staff. A "structured interview" format was employed, in which interviewers asked respondents specified questions and recorded their responses.

The interviewer began each interview by recording background information for each respondent. This information included the respondent's name and job title, the name of the organization for which the respondent worked, organization address and telephone number, and the condition and level of handicap of the persons served by the organization.

The interviewers asked each respondent to read descriptions of on-the-job training (OJT) and classroom/laboratory training and asked him/her to choose the most accurate description of the type(s) of training provided. In addition, respondents were asked to describe their training programs. This description included: 1) the design of training (e.g., upgrading existing employees or entry for new employees); 2) the intent of training (e.g., entry level performance, progression on a specific job, or transfer to a related occupation); 3) the occupation(s) for which training was designed; 4) the skill level and affiliation of trainers, and, finally 5) the kinds of study materials used by trainees.

Twenty-four sets of questions were asked to each respondent based upon the criteria for determining the setting for training of handicapped persons derived from the Evans et al. investigation (see Appendix B). Each item was divided into two types of questions. The first type of question was a criterion quantification question. The purpose of these questions was to quantify each criterion by translating it into terms which could be measured by a numerical figure, a percentage, or some other scaled response. For example, to quantify the cost criterion, the following statement was posed to the respondents: "The average cost of training a student (new employee) to the apprentice level (i.e., person has completed training) is $_____."

The second type of question inquired about each criterion, and was described collectively as criterion opinion questions. These were questions which required the subject to make a judgment about the preferable training method based upon his/her experience. For example judgment or "criterion opinion" question asked the subject was: "Realism of training can best be created with OJT ____, CL ____." The responses to both criterion quantification and criterion opinion questions were recorded by interviewers.

Results

Results suggested that the vocational competencies for which handicapped people may be trained were divided frequently by trainers into three categories: the complex, the less complex, and the easy to learn. There tended to be distinct differences from one category to another in the adaptability of training to an on-the-job work setting. The complexity of training and the adaptability of training to an on-the-job environment was usually the basis for categorization. In the complex skills most of the personnel requirements were better satisfied through classroom/laboratory instruction. In the less complex skills a portion of the training was required frequently to be in a classroom/laboratory environment and the balance of the training was attained through on-the-job training. The third category involved those skills that were relatively easy to learn. For these skills the vast majority of personnel requirements were satisfied through on-the-job training.

In Study 1 it was noted that the criterion, realism in training, was considered by educators and employers as very important. They believed that the students' motivation was increased when learning the skill was associated with the job performance.

Other criteria, in the order of frequency that educators and employers believed them to be important were: criticality of the task to the job, uniformity (standardization), cost of training, complexity of the task, time available for the training, quality desired of the graduate, number of personnel to be trained, availability of suitable resources, and how often the task was performed (frequency).

The least used criterion in Study 1 was prior experience of trainee. Interestingly, the "average" trainee was of high school age and without prior work experience. It can be assumed this was not a relevant criterion for trainees of this age group.

Generally speaking, the task content of the occupations for the handicapped trainee was composed of relatively easy to learn skills. Therefore, the respondents seldom considered the ability/aptitude criteria to be important when deciding the skills to be included in each part of the training program.

Respondents indicated that being provided the opportunity to learn and work appeared to be intrinsically rewarding for many of the handicapped trainees. These individuals seemed to receive their inducement to perform by being allowed to and able to render a service. Hence, the attitude/preference criteria did not appear very relevant to most of the respondents in Study 1.

Other opinions by educators and employers of handicapped students included: classroom/laboratory instruction was more costly overall; cost of equipment, maintenance, training aids, facilities and administration all appeared to combine to make formal instruction more costly than on-the-job training. Further, the use of actual job conditions (physical resources)

was usually thought to be more feasible in on-the-job training. The respondents indicated that the acquisition of equipment and facilities for providing the appropriate environment for learning the skill in a classroom/laboratory was usually too expensive or otherwise impractical to duplicate in a school.

Data collected indicated that realism in training could best be created with on-the-job training because many aspects of the job, such as working the night shift, are difficult to create in a classroom/laboratory setting. Also, when time for training was short, best results could be obtained via on-the-job training. The respondents indicated that when trained personnel were needed quickly, the material to be mastered must be limited to the skills of the job. It was believed that students on-the-job can therefore be pushed through the program more rapidly than their counterparts in the classroom/laboratory.

Skills involving high risk should be acquired through on-the-job training. The majority of the subjects in Study 1 believed that a journeyman on-the-job was best qualified to guide the trainee through the safety procedures involved in the use of high risk equipment or materials. To many of the respondents this criterion was closely associated to the realism in training criterion.

Respondents were also of the opinion that complex tasks are usually more difficult to learn because it may be necessary to learn principles and procedural sequences while developing motor skills. They believed that classroom/laboratory courses were usually best suited for teaching these types of tasks and provided sufficient time to promote the development of complex skills.

Data collected suggested that quality of training can best be measured in on-the-job training because, in the opinion of the majority of the respondents, the supervisor at the place of employment could constantly observe the productivity of the trainee.

Basic educational skills (instrumentality) was thought to be best taught in the classroom. The employers contacted in Study 1 were not equipped to teach skills in reading, computing and communication; nor did they desire to develop the capability to teach these skills on-the-job, in part because public schools included basic educational skills in their training programs.

A few of the respondents believed that trainees who had had prior relevant experience could best be trained in on-the-job training. The rationale for this opinion by the respondents was based on the belief that prior relevant experience and knowledge enhanced the trainees' ability to work-up to the norm expected by the employer. Further, it was believed that lower aptitude trainees could best be trained through on-the-job training. Again, several respondents referred to realism in training as the basis for their opinion about this criterion. They believed that low ability trainees were best trained to perform tasks when they could relate directly to the job in a working environment.

Respondents interviewed believed that on-the-job training produced the most competent employees. This was the general opinion of the employers who conducted on-the-job training for handicapped trainees. The opinions of the instructors who conducted classroom/laboratory instruction were inconclusive. This may have been so because of lack of feedback on the quality of the graduates' performance on-the-job.

General Results

Study 1 did not include interviews with trainees. However, the educators and employers of persons with handicaps were in general agreement that the trainees preferred to learn by on-the-job training.

Other comments and reactions by the respondents in Study 1 were considered in the revision of the questionnaire. During the interviews, for example, it was noted that some respondents would change their answers to the questions. This reaction may have occurred because these respondents had never before considered why they had selected a particular training setting for handicapped trainees. This uncertainty by the respondents led to the development of a "Response Confidence Code" that is described later in this section of this report.

One additional criterion was added to the Evans et al. criteria as a result of Study 1. The Evans et al. study revealed that the capability of the on-the-job graduate versus the classroom/laboratory graduate after completion of their respective training programs was important. That criterion did not address the appraisal of the quality of training during the course of instruction. Therefore, a twenty-fifty criterion, "Evaluation of Training," was added to the list to be analyzed in this project.

Study 1 also revealed the need to revise several items in the questionnaire. The questions designed to quantify each criterion were modified to insure responses that were measurable for each training method. For example, the "Number of Trained Personnel Required" criterion question was changed from: "The largest number of personnel in training at one time on your site is _____," to "The largest number of personnel (of all types) actually in training at one time on your site is OJT _____ CL _____ COMB _____."

Study 1 also exposed the need for systematic interviewer training. In the initial interviews, interviewers had been asked to record data according to their individual judgements of the situation in order to develop an assessment of the breadth of responses which could be expected. Naturally, this made data reduction and analysis difficult. After a standard format for the questionnaire and interview were developed a training program was instituted to assure the reliability of the data collected by the interviewers and to insure that the questionnaire was administered in a standard manner under similar conditions using the same set of instructions for all respondents. This training program was deemed to produce adequate reliability of the collected data.

The foregoing results from Study 1 were reviewed by the project staff and the information was amalgamated into the questionnaire framework that became the second revision of the questionnaire (Appendix C). Each staff member then analyzed each question in the second revision of the questionnaire to assess its importance and capability for acquiring relevant quantifiable data. This action resulted in the final version of the questionnaire (Appendix D) and the development of a procedural guide for data collection (Appendix E).

In summation, the development of procedures for quantification of criteria and improvements in data collection were thought to be the major results of Study 1. Interview questions were reviewed and revised to assure the validity of the questionnaire, and once approved by the project staff, these revisions were incorporated.

Interviewer Training

Each project staff member participated in interviewer training to learn to adhere to a standardized procedure for interviewing respondents. The

intent of this training was to improve procedures for collection of data, and to improve the quality of data collected.

High interobserver reliability would insure that the questionnaires were administered in a standard manner under similar conditions and with the same set of instructions for all respondents. The procedure during each of the training sessions involved two interviewers role-playing an interview situation and recording data while a third, independent observer, also recorded the responses of the interviewee. Interviewer performance across all possible responses (i.e., the response confidence code and interviewee's verbal responses) was calculated according to the formula below.

$$\text{Evaluated Performance} = \frac{\text{Agreements}}{\text{Agreements + Disagreements}} \times 100$$

The number of agreements was divided by the total number of possible responses and multiplied by 100 to yield the evaluated performance for the interviewer. Table 1 summarizes the evaluated performance of each interviewer.

Table 1

Interviewer Interobserver Performance

Interviewer	Performance (%)
1	96.8
2	91.1
3	96.8
4	97.0

Study 2

Method

Respondents. Respondents in this study had existing professional relationships with handicapped persons in Illinois. These respondents were grouped according to one of four job categories: Group 1 were Counselors whose primary function was to assist handicapped persons in making decisions regarding their vocational future; Group 2 consisted of Administrators who made decisions regarding the policy and procedures of prevocational or vocational training programs; Group 3 included Trainers and Instructors who assisted in the development and/or implementation of programs teaching prevocational or vocational skills to handicapped persons; and Group 4 included Employers employing handicapped individuals, whether for financial remuneration or work-study credit.

All respondents were identified by inquiries made to various agencies working with handicapped individuals in the State of Illinois (e.g., Illinois Office of Education and the Illinois Division of Vocational Rehabilitation). A total of 44 respondents participated in this study. Table 2 provides a frequency distribution of respondents grouped according to job category.

Table 2

Respondents Grouped by Job Categories

Category	N	(%)
Counselor	10	(23)
Administrator	12	(27)
Trainer/Instructor	15	(34)
Employer	7	(16)
	44	(100)

Respondents were also grouped according to the method of training provided by their organization, Table 3, and by handicap condition of trainees which they served, Table 4.

Table 3

Respondents Grouped by Reported Method of Training

Method	N	(%)
On-The-Job (OJT)	10	(23)
Classroom/Laboratory (CL)	8	(18)
Combination (OJT & CL)	26	(59)
	44	(100)

Setting. The time and place of interviews was determined by each respondent. Each respondent was contacted by a project staff member (interviewer) and asked if s/he would participate in the study. If agreeable, the interviewer scheduled an interview at a time and location that was convenient to the respondent. Approximately two weeks prior to the interview, the interviewer mailed an information packet to the respondent. The contents of this packet included a letter identifying the name of the interviewer, the time and location of the interview, and a "skeleton" copy of pages 4-30 of the questionnaire (Appendix F). Respondents were asked to skim these questions to familiarize themselves with areas of inquiry before the actual interview.

Questionnaire. The interviewers recorded the respondents' answers to the appropriate blanks of the eight-section questionnaire. The first section was used to record the relevant demographic characteristics of the

Table 4

Respondents Grouped by Handicap Condition of Trainees

Condition	N	(%)
Physical		
Mild	2	(5)
Moderate	5	(11)
Severe	4	(9)
Cognitive		
Mild	5	(11)
Moderate	16	(36)
Severe	2	(5)
Visual		
Severe	3	(7)
Auditory		
Severe	3	(7)
Speech		
Mild	1	(2)
Multiple		
Moderate	1	(2)
Severe	2	(5)
	44	(100)

respondents. These data enabled the project staff to review the relationship between the respondents by professional role, vocational training methods, and handicapped trainees. Information collected here included background information on the respondent (e.g., job title, total months in job, organization, etc.) and respondent category (counselor, administrator, etc.).

Section two of the questionnaire was designed to collect data pertaining to the handicapping condition of trainees served. Each handicapping condition and level of handicap was described briefly in behavioral terms. The respondent was asked to address the one population with whom s/he had the most experience. The purpose of this section, then, was to isolate the possible populations of handicapped trainees for the purpose of statistical comparison.

The third section of the questionnaire provided the respondents with a description of three possible methods of vocational training. These were: 1) On-the-job training (OJT), defined as "all self-study knowledge and job experience acquired by a trainee while working at his or her assigned job." In OJT, teaching and learning usually has a lower priority than producing goods or services. 2) Classroom/laboratory training (CL) defined as, "traditional or conventional classroom instruction in which the instructor and student regularly meet at a specified time and place for the primary purpose of teaching and learning." In CL the production of goods and services always has a lower priority than teaching and learning. And 3) Combination training (COMB), defined as a method which incorporated both on-the-job training and classroom/laboratory

training. The objective of all training methods was assumed to be the mastery by the trainee of specific knowledges and skills needed on a job. Each respondent was given time to read the descriptions, ask questions, and choose the most accurate description of type of training provided by the organization the respondent represented. By using this procedure to isolate the training method, the differences between each method (i.e., OJT, CL, COMB) were comparable.

Section four of the questionnaire examined the design of the identified training approach by asking six questions concerning training. This information revealed the characteristics of existing training programs serving handicapped students. Further, these were compared across handicapping conditions.

Sections five through eight of the questionnaire were composed of questions which determined what criteria were considered when deciding the training method to use when training the handicapped trainee for employment. As in Study 1, questions in these sections were composed of criterion quantification questions and criterion opinion questions. The data gathered from each of these questions were compared (e.g., respondent categorization by handicapping condition and training method, etc.).

Response Confidence Code. Each of the questions in sections four through eight of the questionnaire were accompanied by a "Response Confidence Code." This code was developed by the project staff to evaluate a respondent's self assurance in answering interview questions. For example, if a certain question was answered with an unsure, multiple response by seventy-five percent of the respondents, that question's importance as a factor in deciding the best training method for the handicapped trainee was thought to be suspect.

The response confidence code was recorded by the interviewer. A "1" was coded when the response was firm, i.e., a sure response with only one answer given; a "2" was coded for a changed response, i.e., when two or more responses were given; a "3" was the code for unsure responses, i.e., those multiple responses for which the respondent gives a best possible guess; a "4" was coded when the response was delayed until relevant data was acquired, a "5" was coded when the response was refused, i.e., when the respondent did not have data nor was their accessibility or time to obtain the data.

IV. RESULTS

In Study 2 the project staff has conducted a preliminary test of their operational, statistical, and analytical procedures with a limited population of respondents. The results of this study are summarized by frequency tables which, in some instances, report sufficient data to provide answers to some of the research questions which were previously stated in this report. (Note: The percentage frequencies in some distributions have been rounded by .9 or less to permit the summing of percentages to 100.)

The findings of this study are reported in four sections. These sections report the data by frequency distribution.

Respondents. In this section the respondents' job role and their organizations' method of training are reported in Table 5.

Table 5

Respondents' Category by Method of Training Used

Category N = 44 (100%)	Method					
	OJT		CL		COMB	
	N	(%)	N	(%)	N	(%)
Counselor	2	(5)	2	(5)	6	(13)
Administrator	1	(2)	2	(5)	9	(20)
Trainer	2	(5)	4	(9)	9	(20)
Employer	5	(11)	0	(0)	2	(5)
	10	(23)	8	(19)	26	(58)

The respondents who represent organizations that use a combination setting of classroom/laboratory and on-the-job training are the dominant respondents.

Consequently, the data collected may have been biased by their affiliation with organizations that use that method of training.

Characteristics of Training Programs. The objectives and characteristics of the training programs are reported in Table 6. The data reported in this table identify the training station employer to have the dominant role of preparing handicapped trainees for a job. Emphasis is placed on preparing new employees for job entry and with a common requirement to use written materials during the training program. Persons performing as trainers or instructors are usually qualified in the occupation being taught.

Method of Training. The method of vocational training used by surveyed organizations for trainees with handicaps are reported in Table 7. The data reported in this table show a strong emphasis on a combination of on-the-job and classroom/laboratory instruction for persons with handicaps. The only trainees not receiving some instruction in those training settings are the persons with severe visual and auditory handicaps. Fifty-three percent of the data reported are for trainees with cognitive handicaps, and forty-four percent of all handicapped trainees who are reported in this investigation have cognitive handicaps and receive their training by a combination of on-the-job and classroom/laboratory instruction. This large N has biased the findings toward the methods of training used for the training of the handicapped with cognitive impairments.

Table 6

Objectives and Characteristics of Training Programs

Variables	(Question)	N	(%)	N	(%)
Training is designed to	(Q. 4b)	N = 44	(100)		
(1) upgrade employees				0	(0)
(2) prepare new employees				27	(61)
(3) accomplish both				17	(39)
Training leads to	(Q. 4c)	N = 43	(100)		
(1) entry performance				17	(39)
(2) greater responsibility				3	(7)
(3) accomplish most of (1) & (2)				11	(26)
(4) transfer				11	(26)
(5) transfer and (1) & (2)				1	(2)
Training is designed for employment	(Q. 4d)	N = 37	(100)		
(1) on same job w/same employer				11	(30)
(2) on different job--same occupation and employer				3	(8)
(3) in same occupation--different employer				9	(24)
(4) all of the above				14	(38)
Training is conducted by occupationally qualified person	(Q. 4e)	N = 42	(100)	33	(79)
Training is provided by	(Q. 4f)	N = 44	(100)		
(1) training station employer				41	(93)
(2) eventual employer				14	(32)
(3) both (1) & (2)				13	(30)
Training requires written materials	(Q. 4g)	N = 44	(100)	25	(57)

Table 7

Method of Training for Handicapped Trainees

Handicap Condition/Level N = 44 (100%)	Method					
	OJT		CL		COMB	
	N	(%)	N	(%)	N	(%)
Physical N = 11 (25)						
Mild	1	(2)			1	(2)
Moderate			1	(2)	4	(9)
Severe	1	(2)	3	(8)		
Cognitive N = 23 (53)						
Mild	1	(2)			4	(9)
Moderate	2	(5)	1	(2)	13	(30)
Severe					2	(5)
Visual N = 3 (7)						
Severe	2	(5)	1	(2)		
Auditory N = 3 (7)						
Severe	2	(5)	1	(2)		
Speech N = 1 (2)						
Mild					1	(2)
Multiple N = 3 (6)						
Moderate					1	(2)
Severe	1	(2)			1	(2)
	10	(23)	7	(16)	27	(61)

Criteria Used For Deciding The Training Setting of Persons With Handicaps. In this section the data which identified the criteria for the selection of the training method are reported. When a respondent replied to a specific question (variable), it was believed to be an honest, knowledgeable reply and an indication of which criteria were used and/or considered when choosing a training setting for handicapped trainees.

The data are reported by criteria category groups in Table 8 through Table 12.

Table 8

Identified Institutional Criteria and the Preferred Method of Training

Variable N = Number Responding	Question	Method		
		OJT N	CL N	COMB N
1. Cost				
Least cost-effective method N = 37	Q. 5a(2)	7	26	4
Most cost-effective method N = 42	Q. 5a(3)	18	3	21
Method encouraged by constraints N = 40	Q. 5a(4)	16	11	13
2. Capability				
Method with most capable instructors N = 38	Q. 5b(2)	12	6	20
3. Philosophy and Policy				
Method of training preferred N = 42	Q. 5c(2)	10	4	28
4. Availability and Suitability of Physical Resources				
Actual job conditions are more feasible in N = 44	Q. 5d(2)	35		9
5. Reality of Atmosphere				
Realism can best be created N = 43	Q. 5e(2)	31		12

Table 9

Identified Quantity and Speed Related Criteria
and the Preferred Method of Training

Variable N = Number Responding	Question	Method		
		OJT N	CL N	COMB N
6. Number of Trained Personnel Required				
A large number of trainees can best be trained N = 43	Q. 6a(2)	5	19	19
7. Persistence of Demand for Trained Personnel				
Best method when personnel are needed over an extended period N = 41	Q. 6b(4)	15	3	23
8. Need to Minimize Training Time				
Best method when time for training is limited (short) N = 44	Q. 6c(2)	23	6	15
9. State of the Business Cycle				
Best method when the demand for workers is high N = 39	Q. 6d(2)	14	6	19

Table 10

Identified Job Related Criteria and the Preferred Method of Training

Variable N = Number Responding	Question	Method		
		OJT N	CL N	COMB N
10. Frequency				
Best method to teach on-the-job tasks which are performed weekly N = 42	Q. 7a(3)	23	4	15
11. Criticality				
Best method to teach skills involving high risk N = 43	Q. 7b(2)	17	9	17
12. Uniformity				
Best method to attain uniformity of job/task performance N = 44	Q. 7c(2)	19	10	15
13. Complexity				
Best method to teach complex tasks N = 43	Q. 7d(2)	15	7	21
Best method to teach easy to learn tasks N = 43	Q. 7d(3)	26	6	11
14. Quality Control				
Average number of days for a trainee to produce work of an acceptable quality: N = 33	Q. 7h(2)			
OJT Days: 52 M = 52 Mo = 5 Mdn = 30 Rn = 177		10		

Table 10 (continued)

Variable N = Number Responding	Question	Method		
		OJT N	CL N	COMB N
CL			7	
Days: 383 M = 383 Mo = None Mdn = 390 Rn = 995				
COMB				16
Days: 142 M = 142 Mo = 30 Mdn = 33 Rn = 728				
15. Instrumentality				
Best method to teach basic educational skills	Q. 7g(2)	3	22	19
N = 44				

Table 11

Identified Trainee Background Criteria and the Preferred Method of Training

Variable N = Number Responding	Question	Method		
		OJT N	CL N	COMB N
16. Prior Experience				
Best method when trainees have had pretraining N = 40	Q. 8d(2)	18	3	19
17. Abilities/Aptitudes				
Best method when trainees acquire skills slowly N = 43	Q. 8c(1)	24	3	16
18. Disabilities				
Best method when trainees have skill deficits which are:				
Physical N = 37	Q. 8b(1)	13	4	20
Cognitive N = 38	Q. 8b(2)	13	6	19
Visual N = 28	Q. 8b(3)	9	6	13
Auditory N = 30	Q. 8b(4)	10	5	15
Multiple N = 30	Q. 8b(5)	9	3	18
19. Preferred Learning Method				
Method preferred by the trainees N = 42	Q. 8a(1)	25	3	14
20. Judgement of Performance of Graduates				
Method which produces the most competent employees N = 36	Q. 7e(2)	12	2	22

Table 12

Identified Other Criteria and the Preferred Method of Training

Variable N = Number Responding	Question	Method		
		OJT N	CL N	COMB N
21. Ports of Entry				
Method specified by licensing agency for specific jobs:	Q. 71(3)			
N = 8				
Psychologist, Clinical		1		
Hairdresser/Cosmetologist		2		
Electrical Products Repair Worker		1		
Medicine and Health Worker			1	
Carpentry and related worker			1	
Welder, Cutter				1
Grain Farmworker			1	
22. Screening Device				
Best method to evaluate a trainee for hiring and promotion	Q. 5f(2)	20	6	16
N = 42				
23. Passage of Time				
Least retraining when method is	Q. 7f(6)	16	3	15
N = 34				
24. History and Pragmatism				
Basis of an organizations method of training when it uses:				
OJT	Q. 5g(2)			
Tradition		5		
Data		18		
Both		11		
N = 34				

Table 12 (continued)

Variable N = Number Responding	Question	Method		
		OJT N	CL N	COMB N
CL	Q. 5g(3)			
Tradition			15	
Data			10	
Both			9	
N = 34				
COMB	Q. 5g(4)			
Tradition				4
Data				13
Both				16
N = 33				
25. Evaluation				
Most economical method for evaluation of training	Q. 5h	18	8	15
N = 41				

The data in Table 8 through Table 12 appear to confirm that each of the twenty-five criteria are used when selecting the training settings for persons with handicaps. All criteria but one, Ports of Entry, were given "firm" responses by more than half the respondents participating in this survey.

The method of training most frequently selected by the respondents was a combination of on-the-job and classroom/laboratory training (COMB). On-the-job training (OJT) ran a close second and classroom/laboratory training (CL) was a very weak third.

On-the-job training was the overwhelming choice of respondents when the criteria Availability and Suitability of Physical Resources and Reality of Atmosphere were used in choosing a training setting, but it was not considered as cost-effective as combination. The classroom/laboratory method was considered the least cost-effective method. However, the respondents did consider it to be the best method for Instrumentality, i.e., the method best suited for delivery of basic educational skills.

In summary the data from these tables confirm that trainees prefer OJT more than any other method, and probably, because they can see its relevance. Second, the respondents believe that trainees who learn competencies by either OJT or COMB methods do not experience a substantial loss of job efficiency due to Passage of Time between training and placement. Third, the most competent workers, according to the respondents' Judgement of Performance of Graduates, are the trainees who are products of COMB methods of training.

And fourth, the training method which is most frequently selected by both employing and educational organizations is OJT, when the choice is based on collected data, rather than due to tradition.

V. DISCUSSION

Because of the amount of time spent on development and revision of data collection instruments, and because a deliberate decision was made to concentrate on depth, rather than quantity of interviews, it was inappropriate to compute statistical significance of the interaction of relationships between criteria and the selection of the method of training, the types of training preferred by a type industry or school, and/or the types and levels of handicaps of trainees. This was not the intent of Phase I of this project. Phase I focused on the derivation of questions which would provide the means of collecting data to answer one major question:

> "How do practitioners (educators and employers) choose among the available training settings to best train a handicapped person?"

To date this study has accomplished or determined that: 1) The twenty-four criteria reported by Evans et al. appear to apply to programs for training persons with handicaps. 2) A twenty-fifth criterion needs to be added. 3) Data collected from 44 respondents indicate that the preferred training for persons with handicaps is a combination of classroom/laboratory and on-the-job training. 4) The identification and quantification of criteria in this study extend beyond the conclusions of Evans et al. 5) Criteria have been quantified for data reduction and analysis, but with some modifications to be incorporated during Phase II (to be conducted in 1979-80--Appendix G). 6) A pilot instrument, Criteria Identified By Handicapped Workers For The Selection Of The Training Setting, has been designed and is ready for further trial upon

the inauguration of Phase II. 6) A resource library for project staff use has been established in the staff's office. This library has several recent sources which are not available in the University's library. 7) This project has identified the need for an ongoing collaborative effort by two mutually supportive areas of education which are interested in serving the handicapped: special education and vocational education. 8) The evidence of answer "hedging" by respondents and the confusion experiences by interviewers as to what actually constituted the on-the-job and classroom/laboratory setting for training persons with handicaps in Study 1 made it clear that respondents from both employing and educational organizations would benefit from a brief audio-visual presentation on training methods. This presentation would enable them to understand the difference between on-the-job, classroom/laboratory, and combination settings for training. This has also led to a revision of Phase III to include such instruction for vocational and special education personnel. 9) A major anomaly has been identified in Table 13.

Table 13

Method of Training Preferred by Trainers' and Employers' Organizations for Trainees with Handicaps

Respondent N	Method		
	OJT N	CL N	COMB N
Trainer N = 15	2	4	9
Employer N = 7	5	1	1

a. Why do employers appear to favor OJT for initial job training of persons with handicaps?

b. Why are trainers/instructors nearly unanimous in requiring some form of classroom/laboratory training for initial job training of persons with handicaps?

Normally, the nonhandicapped persons' employers prefer that initial job training be performed in a classroom/laboratory setting, and trainers/instructors prefer similar preparation, but limited in scope, before placement on-the-job (Wallace, 1970).

The data generated in Phase I have focused this investigation on questions that must be answered if educators, and others are going to begin to serve persons with handicaps in the most effective training setting.

Based on the findings of Phase I, Phase II will move in the direction of: a) examining the type of job agency conducting the training, b) to

determine patterns of when and why criteria are used to select a training setting for persons with handicaps. A second direction will be to select a population that is more broadly distributed by condition of handicap and by respondent job agency affiliation, so as to allow statistical tests of relationships among variables determined during Phase I.

REFERENCES

Air Training Command [ATC]. Training performance survey under revised enlistment standards (Project 100,000) ATC EPR 68-1, January 8, 1968. (a)

Air Training Command [ATC]. Resident interim training report (Project 100,000). ATC Project Report No. 68-23, July 16, 1968. (b)

Albright, L., Fabac, J., & Evans, R. N. A system for the identification, assessment and evaluation of the special needs learner in vocational education. Urbana, Ill.: University of Illinois, Bureau of Educational Research, 1978.

American Society for Training and Development [ASTD]. Training methods for skills acquisition. Madison, Wis.: ASTD, 1972.

Bellamy, T., Peterson, L., & Close, D. Habilitation of the severely and profoundly retarded: Illustrations of competence. Training Mentally Retarded, 1975, 10, 174-186.

Black, D., & Bottenberg, R. A. Comparison of technical school and on-the-job training as methods of skill upgrading. AFHRL-TR-70-48, AD-726 530. Texas: Lackland AFB, December 1970.

Bozarth, J. D. Some implications of research in mental retardation for rehabilitation counseling. Rehabilitation Research and Practice Review, 1968, 1(1), 81-103.

Brolin, D. Value of rehabilitation services and correlates of vocational success with the mentally retarded. American Association on Mental Deficiency, 1972, 76, 644-651. (a)

Brolin, D. E. Vocational preparation of retarded citizens. Columbus, Ohio: Charles E. Merrill, 1976. (b)

Carlson, R. E. The Oak That Grew From The Smith-Hughes Act. School Shop, April 1978, 49.

Carpenter, M. B. Maintaining efficient training programs for Air Force technical specialties, United States Air Force Project Rand R-527-PR, September 1970.

Christal, R. E. The United States Air Force occupational research project, AFHRL-TR-73-75. Texas: Lackland AFB, January 1974.

Dahl, P. R. A practical guide. School Shop, April 1978, 66-69.

Delbecq, A. L., Van de Ven, A. H., & Gustafson, D. H. Group techniques for program planning: A guide to nominal group and delphi processes. Glenview, Ill.: Scott, Foresman and Co., 1975.

Evans, R. N., Holter, A., & Stern, M. Criteria for determining whether competency should be taught on-the-job or in a formal technical course. The Journal of Vocational Education Research, Spring 1976, 1(2), 21-28.

Gardner, D. C., & Warren, S. A. Career disabilities: A career education approach. Stanford, Conn.: Greylock Publishers, 1978.

Gold, N. W. Stimulus factors in skill training of the retarded on a complex assembly task: Acquisition, transfer and retention. American Journal of Mental Deficiency, 1972, 76, 517-525.

Gollay, E., & Bensberg, G. J. Making better use of support resources. School Shop, April 1978, 54-56.

Hartlage, L. C., & Tabara, D. Implications of differential employer acceptance of individuals with physical, mental, and social handicaps. Rehabilitation Research and Practice Review, 1971, 2(3), 45-48.

Issac, S., & Michael, W. F. Handbook in research and evaluation. San Diego, Calif.: EDITS, 1971.

Lawlis, F. The chronically unemployed: Vocational immaturity? Arkansas Rehabilitation Research and Training Center and University of Arkansas, April 1974.

Leeznar, W. B. The road to work: Technical school training or direct duty assignment? AFHRL-TR-72-2. Texas: Lackland AFB, April 1972.

Levitan, S. A., & Taggart, R. Jobs for the disabled. Baltimore: Johns Hopkins University Press, 1977.

McNelly, D. E., & Kazanas, H. C. A cost/benefit comparison of cooperative vocational and in-school vocational-technical education programs. Journal of Industrial Teacher Education, 1975, 13(1), 62-73.

Neimanich, D., & O'Rourke, D. A manual for the coding of survey data. Dubuque, Iowa: Kendall and Hunt, 1975.

Oberle, J. B. Life satisfaction and the alienated worker. Rehabilitation Research and Practice Review, 1971, 2(4), 37-48.

O'Toole, J. On-the-job learning. Worklife, January 1976, 2-6.

Razeghi, J. A., & Halloran, W. D. A new picture of vocational education for the employment of the handicapped. School Shop, April 1978, 50-53.

Singer, R. N. To err or not to err: A question for the instruction of psychomotor skills. Review of Educational Research, 1977, 47(3), 479-498.

Samers, B. N., Dunham, A. D., & Nordhauser, F. Evaluation of methodology for estimating cost of Air Force on-the-job training, AFHRL-TR-74-34. Texas: Lackland AFB, November 1974.

Tabbush, V. C. Investment in training: A broader approach. Journal of Human Resources, 1977, 12(2), 252-257.

U.S. Congress. Rehabilitation act of 1973. Public Law 93-112. Washington, D.C.: U.S. Government Printing Office, 1973.

U.S. Congress. Rehabilitation act amendments of 1974. Public Law 93-516. Washington, D.C.: U.S. Government Printing Office, 1974.

U.S. Congress. Education for all handicapped children act of 1975. Public Law 94-142. Washington, D.C.: U.S. Government Printing Office, 1975.

U.S. Congress. Education amendments of 1976. Public Law 94-482. Washington, D.C.: U.S. Government Printing Office, 1976.

U.S. Department of the Air Force [USDOAF]. Instructional system development, AFM 50-2. Washington, D.C.: Author, December 1970. (a)

U.S. Department of the Air Force [USDOAF]. Handbook for designers of instructional systems, AFP 50-58. Washington, D.C.: Author, January 30, 1974. (b)

U.S. Department of Labor. Dictionary of occupational titles (4th ed.). Washington, D.C.: U.S. Government Printing Office, 1977.

U.S. Department of Labor. Occupational outlook handbook (1978-79 ed.). Washington, D.C.: U.S. Government Printing Office, 1978.

Van Dalen, D. B. Understanding educational research: An introduction (3rd ed.). New York: McGraw-Hill, 1973.

Wallace, H. R. Review and synthesis of research on cooperative vocational education. Columbus, Ohio: The Center for Vocational and Technical Education, Ohio State University, 1970 (ERIC Document Research Series No. 60, VT 010 859).

Walker, R. W. An evaluation of training methods and their characteristics. Human Factors, 1965, 7(4), 347-354.

Welch, S. Sampling by referral in a dispersed population. Public Opinion Quarterly, 1975, 39, 237-245.

Woodring, P. Vocational education: How much, what kind, and when? Phi Delta Kappan, 1979, 60, 644-646.

Zelhart, P. F., Jr., & Bednar, R. L. Consideration for working with the "hard core" unemployed in a rehabilitation setting. Rehabilitation Research and Practice Review, 1968, 58, 49-59.

APPENDIX A

Criteria

The Twenty-Four Criteria Used When Selecting The Training Setting

The following is an extract of the Evans et al. twenty-four criteria (pp. 27-36).

1. Institution Related Criteria

1a. Costs. Cost is a key criterion in determining how and where a skill should be taught. All other considerations have an impact on costs. The use of facilities, personnel, resources, materials and actual equipment may be very expensive; conversely, the use of substitutes could reduce costs in some training situations. Cost models have been developed by many agencies responsible for conducting formal resident training courses. These models are used to determine the average cost per graduate. Very little comparable information is available for OJT courses, although some study has been accomplished in this area. The Air Force Human Resources Laboratory (Dunham, 1972) compared the relative costs of Air Force resident training versus OJT for the Communications Center Ladder. The results of this study indicated the cost of technical school training to be almost double the cost of OJT. The increase in cost was attributable to the cost of equipment, maintenance, training aids, and administration, all of which may be considerably less for on-site training. A conclusion which might be inferred from a cursory examination of these costs is that as many persons as possible should be trained through OJT. Dunham points out, however, that factors in addition to costs need to be considered. His study is typical of other work in this area because it did not (and could not) consider all the factors that should be considered in a cost-effectiveness study. Thus, further study of these costs is warranted.

Reduced productivity, increased supervisory costs, instruction costs, training supplies, and equipment damage and wastage during training on the job are also major cost factors but are difficult to assess. There is a limit to any institution's capacity to

underwrite OJT skill development. The number of personnel who can be on OJT at any point in time without causing an unacceptable loss in productivity must be considered. Likewise, there is a limit on the number of qualified journeymen who can be used as trainers in the OJT program without significantly increasing the costs of the operation. Still another limit may be placed by the number of trainees who can be trained simultaneously on a piece of equipment and actually get to operate it. Requirements for suddenly training large numbers of new workers often lead companies to establish vestibule schools, which really are formal technical training courses under the control of the employer. however, as the organization gains experience, it may be able to lower costs by shifting to training on the job. Therefore, in determining the appropriate method of training, the program developers need to know the institution's current and future capacity for both resident training and OJT. Decisions, once made, need to be continually reassessed to assure training is both cost effective and responsive.

Other aspects of costs are the foregone earnings of workers while in trainee or learning status, the costs incurred by the public in support of training institutions, taxation, wages paid to workers to compensate for their personal investments in skill development, and prices of goods and services as affected by employer-paid skill development. Cost is, therefore, particularly important when considering the advantages and/or disadvantages of bringing the trainee to the instructional activity as opposed to taking the instruction to the trainee on the job.

1b. Capability. If qualified OJT instructors are not available at every site to which untrained personnel will be assigned, some type of schooling may be necessary, at least temporarily. If untrained personnel will be regularly assigned to remote, small installations, OJT may never be satisfactory because of the absence of capable OJT instructors. On the other hand, if formal training courses are not available or if the training they provide is obsolete or otherwise inapplicable, OJT may be the only practical alternative. Capability of the training organization is often a function of the length of time a task has been performed. The Air Force has noted that when new tasks are created as a result of introduction of a new weapons system, there is a predictable sequence of types of training: first, the factory or some other agency outside the Air Force provides the training under contract; second, the Air Training Command sends mobile training teams to each site where the new device is used; third, formal, resident technical courses are established; and, finally, training is transferred gradually to OJT for more and more tasks. The availability of both knowledge and skill channels for OJT increases its utility. Traditionally, the skill channel of OJT has been provided through imitation, plus practice. If a skilled worker is willing to demonstrate a skill, progress is more rapid, in part because the demonstration may include knowledge about the skill. The Air Force usually uses correspondence courses to provide a knowledge channel for OJT trainees. If the knowledge channel can be made readily available, OJT may become preferable to formal course work.

1c. Philosophy and policy. The setting in which the training is to be conducted is an important criterion. If the administrators are skeptical about the efficacy of a particular procedure for training, that procedure will be used less frequently. Moreover, when it is used, it is likely to be less effective because many of those who are involved will expect it not to succeed. Empirical data on the conditions under which particular types of training are more successful can, of course, be influential in modifying preconceived ideas. Employee-imposed restrictions may have an influence on the manner and/or site in which a job or task is taught. The language of the contract between labor and management may dictate the limitations of the training programs. For example, a contract may limit the ratio of apprentices to journeymen, or specify that a person must acquire certain seniority before he or she is trainable, thereby restricting the OJT capability of the organization. Whether or not a union is involved, employees may desire to protect their jobs by limiting the number of new people to be trained. Restrictions of this type, when included in a contract or when imposed by an OJT trainer, acting on his own, can influence the OJT capability of an organization.

1d. Availability/suitability of physical resources. Regardless of the method of training selected in any particular technical situation, trainees ideally should acquire new skills under conditions and with equipment which are identical to those they will encounter on the job. For example, a trainee expecting to use an electric typewriter on the job should use an electric typewriter during training. This will allow the trainee to practice the actual behaviors he/she is expected to exhibit after training and thus increase the training effectiveness. But, the use of actual job conditions is not always feasible in either formal technical training or OJT. It is possible that the use of actual equipment, materials, or personnel would result in work stoppages for personnel who normally use the facilities. For example, if an actual assembly line or other line production facilities were used for training, regular personnel might be unable to produce during that time. Even one OJT trainee can disrupt a line (ASTD, 1972). However, if equipment is normally idle for a substantial length of time, OJT could be scheduled during these times. But the cost of starting up an assembly line or a large piece of equipment such as a 25-ton liquid oxygen generator for training purposes must be considered. The use of synthetic or task trainers in a resident course may be a more efficient method of developing the skill.

Likewise, the availability of training equipment for resident courses may be a qualifying factor. The acquisition of these resources usually requires leadtime for development and installation. These actions must be completed prior to the time trained personnel are required, and the equipment and facilities must provide the appropriate environment for learning the skill and knowledge required on the job. Again, the basic criterion is effectiveness of instruction, but effectiveness must be continually measured against cost. Some equipment is too expensive to duplicate in a school.

In some situations the actual equipment used on the job may be so complex that it hinders learning. For example, tracing the brake system through an actual airplane takes considerable time and effort. When the components of this sytem are mounted on a schematic board, the resulting mock-up is unlikely, however, to be effective in teaching location of parts of the system in a real plane. Mock-ups are more frequently available in schools, and real airplanes are more likely to be found on the job.

1e. Reality of atmosphere. Some aspects of the job are almost impossible to duplicate of the job. Some processes use up expensive material so rapidly that it must be moved out and sold quickly in order to buy more material and keep the workplace from being inundated by finished products. But perhaps the most difficult reality problems for formal technical training lie in the affective domain. How does one feel about shift work, about having to work on holidays, about working high off the ground? How does one respond to the pressures of too little time and too many demands? These aspects of training are difficult to create off the job (Stern, 1975).

Management knowledge and skills can usually best be acquired where the association with the job performance tends to increase the trainee motivation. On the job, the application of management tasks by the trainee will directly support the job performance, whereas in formal technical training the student may learn about management duties but not be able to do those tasks. Management knowledge can effectively be included in instructional packages for OJT. However, many management topics such as organizational structure and interface, agency objectives, interpersonal relationships, and policy are good subjects for formal training.

Quality of the role models may determine how effectively affective behaviors are taught. In some cases the best models may be on the job, and in some cases the best models may be in the formal instructional setting. In any case, OJT students usually have a wider range of models from which to choose.

2. Quantity and Speed Related Criteria

2a. Number of trained personnel required. The number of personnel to be trained must be considered. Factors such as trainee time, instructor time, quality of training, use of equipment, material and facilities are cost effective elements when the flow of students through a formal training course is large.

Conversely, the cost advantage for OJT may disappear when subjected to large numbers of trainees. Under these circumstances, trainer manpower requirements could become inordinately large and cause a strain on the ability of units or shops to maintain the necessary level of productivity. The formal training course can be rapidly expanded in time of need, whereas large, sudden increases imposed in the OJT system could lead to costly sacrifices in productivity.

2b. Persistence of demand for trained personnel. The availability of trainees over an extended period of time may justify the acquisition of facilities, equipment, and staff to support formal training courses. Conversely, if a job classification is going to be phased out, or a product is going to be discontinued, so that new entrants for an occupation will be needed for only a year or two, the construction of facilities and the development of curricula for residential training may be impractical.

2c. Need to minimize training time. If training time is to be minimized (trained personnel are needed quickly) and the material to be mastered is complex, consideration should be given to an established formal technical course as the method of training. Under these conditions, trainees cannot be allowed to pace training for their individual convenience, but must be pushed through training as rapidly as possible.

2d. State of the business cycle. When the demand for labor is low, employers will have neither the interest nor the financial incentive to supply training. However, the costs of pre-job training for the unemployed will be reduced by at least their foregone earnings, and there may be social as well as economic advantages to upgrading skills in schools during such periods.

3. Competency Related Criteria

3a. Frequency. The occupational analysis to determine the tasks which comprise the job can be the big pay-off in determining whether training should be conducted in a formal resident course or by OJT or at all. The Air Force has saved millions of dollars by eliminating training on tasks which occupational surveys have revealed to be performed by few workers. Ordinarily a task can best be taught by OJT if the probability of any one worker having to perform it is very low. Some curriculum developers consider OJT for teaching tasks performed by less than 50 percent of the workers. Care must be exercised in making these kinds of decisions. The fact that few workers perform certain tasks should not be the governing criterion in determining the training requirements. Other factors such as safety, cost of teaching the task in a formal training course compared to teaching it on the job, criticality and consequences of inadequate performance must be considered.

3b. Criticality. The consequence of inadequate performance (risk factor) is an important criterion in selecting course content and instructional setting. For example, if a task must be accomplished in an emergency, such as fighting a certain type of chemical fire, and if the probability of being able to perform adequately without formal training is low, then the skill may best be acquired in a formal course. High risk to personnel, trainers, equipment or facilities may result if inexperienced trainees use actual equipment or materials under the guidance of a journeyman who lacks an understanding of the laws of learning. An extreme example would be training x-ray technicians using actual patients and x-ray machines. In the use of office mimeograph equipment,

safety is not likely to be nearly as great an issue. Consequences of task delay may also contribute to criticality. How long can the job wait while a trainee locates the proper section of a training manual or asks a supervisor for critical information?

3c. Uniformity. Standardization of training is also a consideration when selecting the method of training. OJT represents decentralized control of training. Formal schools in the Air Force have more centralized control. OJT may result in training which varies from trainee to trainee and from shop to shop because of varying missions, equipment and procedures. For example, if trainees are learning to repair vehicles, some trainees may have an opportunity to repair transmissions, but others will not. On the other hand, students attending a formal resident course can be required to learn all types of tasks they need to perform at a high degree of proficiency. Each behavioral objective will be achieved by each student. All will have experienced like kinds of training upon graduation. Such standardization of training provides for mobility of personnel because they will be able to do the job in the same fashion from one work station to another. School instruction tends to be "morally pure." That is, it does not teach students to cut corners and sacrifice quality for quantity in response to time pressures. This may lead to undesirable standardization if the instructors in formal courses fail to recognize valid short cuts where a reduction in the quality of work is acceptable (Stern, 1975).

3d. Complexity. There are two major components to learning difficulty: difficulty of the task and difficulty of learning due to trainee characteristics. The former is often specified in terms of how long it takes the average trainee (or 90 percent of the trainees in a class) to learn a skill. Complex tasks are usually more difficult to learn because it may be necessary to learn principles and procedural sequences while developing motor skills. Resident courses are usually best suited for teaching these types of tasks because such courses provide the equipment and other resources needed to teach principles and procedures, and provide sufficient time to promote the development of skills.

If the trainees have characteristics different from those who the instructor is accustomed to teach, it is likely that the length of time required to bring the trainees to competence will also be different. Further complicating the problem are artificial learning difficulties. For example, learning may be difficult because the technical manual is difficult to understand, or the environment may not be conducive to easy learning. Generally speaking, if the job is relatively easy to learn, requires field equipment or facilities, and is semicritical or noncritical, one should consider developing the skill through OJT.

3e. Quality control. If considerable time is required before a worker can learn to produce work of acceptable quality, OJT may not be feasible for initial instruction. This is a major reason for the widespread use of vestibule schools in the textile industry (ASTD, 1972).

3f. Instrumentality (Stern, 1975). Skills in reading, computing and communicating are instrumental to learning most occupational tasks, but are difficult to teach on the job. If job tasks which require basic educational skills are to be taught via OJT, it may be wise to plan for formal instruction (such as remedial education in the 3 Rs) prior to OJT. Stern (1975) also points out that specialized reading skills such as blueprint reading would be instrumental to learning many trades of the construction and manufacturing industries. Familiarity with specialized bodies of knowledge such as chemical, physical and mechanical properties of materials would be highly instrumental to mastery of psychomotor tasks in many trade and technical level occupations. Higher levels of instrumentality would be characterized by troubleshooting and diagnostic activities in such areas as television and automobile engine repair and other service type occupations.

4. Trainee Related Criteria

4a. Prior experience. Many trainees for technical jobs already have some job relevant behaviors before entering training. They may be well prepared in basic education. They may also have some of the required technical skills and knowledge from prior courses or work experience. When the large majority of the incoming trainees have directly relevant prior experience on most elements of the job, the training course should be OJT.

Trainees with prior experience may also present unacceptable behavior. Although OJT may be appropriate for establishing, maintaining or improving desirable performance behaviors, it may not be the best setting for modifying or extinguishing undesirable performance behaviors.

4b. Abilities and aptitudes. If trainees have abilities and aptitudes which do not differ significantly from the norm, special consideration in the choice of the appropriate instructional setting may not be required. If trainees have above average manipulative skills, less practice time may be required in the laboratory. Perhaps the skill can even be taught OJT.

4c. Disabilities. When trainees have special needs due to mental, physical or emotional handicaps or low aptitudes, the length of time required to bring them to competence may be greater. Trainees with low aptitudes, when given sufficient time on the job, can learn to perform many tasks which they could not learn in a short period of time. A trainee, if allowed to move at his or her own pace, where a delay is acceptable, and if given the time to research technical training manuals, may learn to master complex jobs through OJT. On the other hand, technical schools use a variety of training methods, while OJT relies heavily on reading. If the OJT trainer and trainee both have reading deficiencies, there may be severe problems. If the trainee population is changed to include many more people with learning difficulties, shifting some training from OJT to formal instruction should be considered.

4d. Preferred learning modes. For some individuals, career satisfaction is related to being able to work and learn on the job. These individuals may even enter a particular career field because it affords them this kind of opportunity. Other individuals feel more satisfied when learning in a formal setting and, therefore, seek careers in occupations taught mostly off the job. For some careers, both types of preparatory programs are offered. The Armed Forces encourages individuals to volunteer for service by offering training that will lead to a satisfying career in the service or qualification for skilled employment or further education upon discharge. Formal resident course training may be an inducement to those individuals who relate job satisfaction and contentment to formal classroom instruction. Others may desire to enter a career field because it offers them a chance to work and learn on the job. Where both formal resident training programs and OJT programs are available in a career field, the desires of the trainee should be considered. The chance to select the type of training may contribute toward his or her future job satisfaction. The Air Force could provide this kind of choice to many enlistees. In about 30 career ladders, the Air Force has established what it calls a Category B training plan. Under this plan, a proportion of the assignnees to the ladder are sent directly to the field with no formal training, while the remaining individuals go through an entry-level resident training course, and then are sent to the field. Since the individual has no particular characteristic that identifies him for directed duty assignment, chance has generally determined whether he is to be trained on the job or in a formal resident course. With increased emphasis on job satisfaction, the trainee should, where possible, select the kind of training program that best satisfies his or her needs and desires. The increased availability of college credit for formal technical training seems likely to increase trainee preference for this type of training. College credit is not generally available for OJT.

4e. Judgements of performance of graduates. The capability of the OJT and the formal course graduate must be compared in terms of performance when determining the method of training. Recent investigations in this area have produced inconclusive results. The performance of OJT and technical school graduates was compared in an Air Force Human Resources Laboratory (AFHRL) investigation (Dunham, 1972). That study, based on an analysis of assessed knowledge for both technical school and OJT graduates of the Communications Center Operations Specialty, found essentially no significant differences for the two types of trainees. In another AFHRL investigation (Lecznar, 1972), the performance of OJT and technical school graduates was compared in terms of six criteria; a job difficulty index, average task difficulty, number of tasks performed, job interest, self-report of utilization of talent and training, and overall performance ratings. Again no advantage of technical school over OJT was found. There was an indication that those trained on the job performed more tasks than those trained in the formal entry-level course. However, there is insufficient evidence to support any hypothesis that graduates of formal resident training courses are superior to OJT graduates.

5. Other Criteria

5a. Ports of entry. For occupations which are at a port of entry between the external and internal labor market, pre-job training is appropriate. For those which are not at a port of entry, the pre-trained worker must be employed at a job below his skill until he progresses upward in the internal system. Training within the firm is likely to be more appropriate in these cases, and most small firms have only OJT available. Some occupational entry is controlled by state licensing boards and the amount of formal instruction versus OJT is regulated by state agencies.

5b. Screening device. Formal courses may provide opportunities to screen trainees or employees for promotability or for security problems. Some employers establish formal technical courses which are available outside regular work hours. If employees are willing to enroll on their own time and do well, it is often assumed that they have motivation and ability required for promotion. Successful completion of a formal course in a nearby technical school may receive similar employer acceptance. While OJT, in the form of job rotation for management personnel, has similar high credibility with employers, it seems unlikely that OJT for blue-collar workers would receive similar acceptability for promotion. Thus, both the employer and the blue-collar worker may prefer formal instruction as a screening device for promotion, even though OJT might be more effective for developing the competency. In some careers, school allows time for the completion of security checks and for assessing the reliability of the person's performance in difficult situations which arise infrequently on the job.

In a health occupations training program conducted by the University of California at Los Angeles, trainees were given OJT in numerous areas of a hospital. Instructors were able to assess students' strengths and weaknesses in relation to people, data and things. They were then better able to place the student in employment or further training.

5c. Passage of time. In some career fields such as the Armed Forces and multi-national businesses, there are no stateside positions in certain job categories; consequently, the trainee is kept in school until transferred overseas. In correctional institutions it is difficult to have time of training completion coincide with time of release. Rather than transfer inmates to a less desirable environment in the prison, it may be preferable to retain them in the instructional setting until release. Some inmates have served as teacher aides under these circumstances.

Consideration must also be given to the time interval between graduation from formal courses and initial performance. This criterion may have an impact on qualitative requirements because it involves knowledge and skill retention. There may be a loss of proficiency if the time interval is great and it may not be economically practical to attempt to compensate for such losses

by providing a high level of initial instruction. In such cases, some knowledge of the task may be taught in the formal resident course and skill acquired through OJT at the time of initial performance.

5d. History and pragmatism. In interviewing training personnel to determine the criteria they used for deciding whether to teach a competence via OJT or a formal technical course, it was typical to hear that the matter had not been given much thought. When asked why typing was almost always taught in a formal class instead of through a cooperative education program, a typical response was, "Well, we've always done it that way, and it seems to work pretty well." A more experimental, pragmatic approach was demonstrated by training directors in large companies. They indicated that no formal criteria had been set out, but that the training director used his experience to decide whether OJT or formal technical training would work best in a particular case. If this did not work well, a decision would be made to shift instructors, training materials, etc., from OJT to formal training or vice versa.

APPENDIX B

Criteria, Instruction of the Handicapped Survey

Criteria, Instruction of the Handicapped Survey

1. The person responsible for the training of handicapped personnel should complete this survey. Approximately one (1) hour will be required to complete this survey.

2. A separate survey will be completed for <u>each type</u> of handicapped person served by the organization and for each type of training (OJT or Class/Lab). For example, if an organization is serving people with two (2) different handicapping conditions and offers both training alternatives then four (4) surveys need to be completed for that organization.

3. The person who fills out this survey is encouraged to ask for help from others, such as the OJT trainer or the classroom instructor when uncertain about the answer to a question.

4. If there is difficulty in deciding on what is being asked, please ask the interviewer for assistance.

Background Information of the Respondent

Name (last, first, middle initial) _____

Job Title _____

Total months in present job _____

Organization _____

Address _____

Telephone number _____

Type of handicapped served by the organization. Please specify the level of handicap for each type of handicap.

Physical _____

Mental _____

Blind _____

Deaf _____

Other (specify) _____

Descriptions of On-The-Job Training and Formal Technical Training

Type of Training: Please specify the type of training you provide:

____ OJT

____ Formal technical training

____ combination

Is your training designed for:

____ upgrading existing employees

____ entry for new employees

General Instructions: The interviewer will ask the respondent to read the descriptions of OJT and formal technical training (class/lab) and ask him/her to choose the most accurate description for the type of training they provide.

On-the-job training (OJT) encompasses all self-study knowledge and job experience acquired by a trainee while working at his or her assigned job. Formal technical training is traditional or conventional classroom or laboratory instruction in which the instructor and student regularly meet at a specific time and place for the primary purpose of teaching and learning. The objective of both of these methods of training is assumed to be the mastery by the trainee of specific knowledges and skills needed on a job. In OJT, teaching and learning may have a lower priority than producing goods or services, and in formal technical training, the production of goods and services always has lower priority than does teaching and learning. (Evans, Holter and Stern)

(Choose one from A, from B, from C and from D)

A
1. Leads to entry level performance on a specific job.
2. Leads to greater responsibility (progression) on a specific job.
3. Leads to transfer to a related occupation.

B
1. Training designed for employment on the same job by the same employer.
2. Training designed for employment in same occupation, but different job setting (same employer or different employer).

C
1. Training given by any experienced employee.
2. Training given by a skilled trainer:
   a. Who is provided by the "training station employer"
   b. Who is provided by the "eventual employer"

D
1. Training accompanied by self-study materials.
2. Training accompanied by formal classroom/laboratory instruction.
3. Training accompanied by self-study and formal classroom/laboratory instruction.
4. All instruction done on the job.

Questionnaire on Training Modes

1. Costs: The average cost of training a student (new employee) to the apprentice level (i.e., person has completed training) is $_____.

   Which training mode, in your opinion, is the more costly to apply? ____ OJT ____ CL

2. Capability: The number of qualified applicants for each vacant position on the training staff is _____ per vacancy.

   The capability to train personnel to accomplish tasks in your occupation is usually found in ____ OJT ____ CL ____ Both

3. Philosophy and Policy: Administrative expectations for the success of your training program are in your opinion:

   low probability medium probability high probability

   The policy of your organization indicates a preference for ____ OJT or ____ CL as a training mode?

4. Availability/suitability of physical resources: Students (new employees) acquire new skills under conditions and with equipment which are identical to those they will encounter on the job ____% of the time.

   The use of actual job conditions is usually more feasible in ____ OJT ____ CL.

5. Reality of atmosphere: Students (new employees) are trained in a work atmosphere (i.e., breaks, work shifts, etc.) that is identical to that in the work environment ____% of the time.

   Realism of training can best be created with ____ OJT ____ CL.

6. Number of trained personnel required: The largest number of personnel in training at one time on your site is ____.

   A large flow of students can best be trained through ____ OJT ____ CL.

7. Persistence of demand for trained personnel: Trainees for jobs in your occupation will be needed for ____ years to come and the annual requirement for trained personnel in your labor market area is ____.

   When trainees are required over an extended period of time, in your opinion, the better mode of training is ____ OJT ____ CL.

8. Need to minimize training time: The average time to train a student (new employee) is ____ months.

   When time for training is short, best results can be obtained, in your opinion, via ____ OJT ____ CL.

9. State of the business cycle: The percent of employees earning a competitive wage within a year after completion of the training given in your setting is ____%.

   When the demand for labor is high, training in your skills can best be supplied through ____ OJT ____ CL.

10. Frequency: In your estimation, the number of tasks you teach to all students that will be performed everyday by them upon completion of training is ____.

    In your estimation, the total number of tasks you teach new students (new employees) is ____.

11. Criticality: The number of tasks in your job setting that involves high risk or safety to your employers, equipment, or facilities is ____.

    Skills involving high risk may be best acquired, in your opinion through ____ OJT ____ CL.

12. Uniformity: The importance of having a task performed uniformly (i.e., in exactly the same way by all students/new employees) is:

    1 — 2 — 3 — 4 — 5

    very important somewhat important not important

    Greater uniformity in terms of trainee job/task performance can best be attained ____ OJT ____ CL.

13. Complexity: The average time required for a student (new employee) to learn a complex task to acceptable quality standards is ____.

    The training mode best suited for teaching complex tasks is ____ OJT ____ CL.

    If the job is relatively easy to learn, the skill can best be developed through ____ OJT ____ CL.

14. Quality Control: The average time required for a trainee to learn to produce work of acceptable quality is _____.

    The importance of training quality control in tasks is:

    1 — 2 — 3 — 4 — 5

    not important somewhat important very important

    The quality of training can best be measured in _____ OJT _____ CL.

15. Instrumentality: The percent of tasks in your training program that require skills in reading, computing, and communicating is _____.

    Job tasks which require basic educational skills are best taught in ____ OJT ____ CL.

16. Prior Experience: The percent of tasks in which the "average" trainee already has some job relevant behaviors before entering training is ____ %.

Trainees that have relevant prior experience can best be trained in ____ OJT ____ CL.

17. Abilities and aptitudes: These qualities will be described on the cover sheet.

Lower aptitude students (new employees) can be best trained in the skills of this job through ____ OJT ____ CL.

18. Disabilities: These qualities will be described on the cover sheet.

Trainees with physical handicaps can learn to master tasks at their own pace better through ____ OJT ____ CL.

19. Preferred learning modes: Which training mode is preferred by the student (new employee) for learning the skills of the job? ____ OJT ____ CL.

In your opinion, which training mode is the best mode for learning the skills of the job? ____ OJT ____ CL

20. Judgement of performance of graduates: The number of "graduates" who are promoted to higher status jobs after one year of working for a competitive wage is _____.

In your opinion, which training method produces the most competent employees? ____ OJT ____ CL.

21. Ports of entry: Is the entry into your fields of occupation controlled by a licensing board or agency such as the state? ____ Yes ____ No

If yes to above, does the agency regulate the amount of training required for entry into the occupation? ____ Yes ____ No

If yes to above, specify type of training. ____ OJT ____ CL ____ Both

22. Screening device: In your training program, are students (new employees) required to complete any screening (i.e., security check, physical-psychological exam) before being allowed to complete/graduate from the program? ____ Yes ____ No

The use of training as a screening device for both hiring and promotion can best be accomplished through ____ OJT ____ CL.

23. Passage of time: The time internal between completion of the training program and initial performance in the competitive setting is ____ days.

Loss of proficiency when the time interval is great between graduation and initial performance is minimized if the training was acquired through ____ OJT ____ CL.

24. History and pragmatism: How often is the decision to use OJT or CL based on traditional training methods (i.e., the training program might have been OJT based since WW II)?

never — sometimes — always

APPENDIX C

Criteria, Instruction of the Handicapped Survey

Criteria, Instruction of the Handicapped Survey
Background Information of the Respondent

Name (last, first, plus middle initial) _____

Job Title _____

Total Months in present job _____

Organization _____

Address _____

Telephone number _____

Respondent categorization (interviewer to check one):

Group I - Administrator _____

Group II - Consumer/Employer _____

Group III - Trainer/Instructor _____

Group IV - Counselor _____

Group V - Self Actualized Individual _____

It is believed that a "handicap" is a temporary inconvenience brought about by a skill deficit in a certain ability area or combination of areas. In view of this and with sensitivity for the derogatory effects of labels describing individuals who may display these characteristics, we wish to discard these traditional labels and categorize people according to their individual skill levels.

To facilitate data organization we ask the respondent to specify the one area and level about which they feel most qualified to speak when being interviewed. If time allows, the respondent is free to answer a separate set of questions for a second group being served.

	Mild vocational inconvenience	Moderate vocational inconvenience	Severe vocational inconvenience
1. Physical skill deficit			
2. Cognitive skill deficit			
3. Visual skill deficit			
4. Auditory skill deficit			
5. Emotional skill deficit			
6. Speech skill deficit			

Descriptions of On-The-Job Training and Formal Technical Training

Type of Training: Please specify the principal type of training you provide:

_____ OJT

_____ Formal technical training

_____ Combination

Is your training designed for:

_____ Upgrading existing employees

_____ Entry for new employees

_____ Combination

General Instructions: The interviewer will ask the respondent to read the descriptions of OJT and formal technical training (class/lab) and ask him/her to choose the most accurate description for the type of training they provide.

On-the-job training (OJT) encompasses all self-study knowledge and job experience acquired by a trainee while working at his or her assigned job. Formal technical training is traditional or conventional classroom or laboratory instruction (CL) in which the instructor and student regularly meet at a specific time and place for the primary purpose of teaching and learning. The objective of both of these methods of training is assumed to be the mastery by the trainee of specific knowledges and skills needed on a job. In OJT, teaching and learning may have a lower priority than producing goods or services, and in formal technical training, the production of goods and services always has lower priority than does teaching and learning. (Evans, Holter and Stern, 1976)

(Choose one from A, from B, from C and from D)

A
1. Training leads to entry level performance on a specific job.
2. Training leads to greater responsibility (progression) on a specific job.
3. Training leads to entry level and to greater responsibility on a specific job (combination of 1 and 2 above).
4. Training leads to transfer to a related occupation.

B
1. Training designed for employment on the same job by the same employer.
2. Training designed for employment in same occupation, but different job setting (same employer or different employer).

C
1. Training given by any experienced employee.
2. Training given by a skilled trainer:
   a. Who is provided by the "training station employer"
   b. Who is provided by the "eventual employer"

D
1. Training accompanied by self-study materials.
2. Training accompanied by formal classroom/laboratory instruction.
3. Training accompanied by self-study and formal classroom/laboratory instruction.
4. All instruction done on-the-job.

9. State of the business cycle: The percent of trained personnel earning a competitive wage within a year after completion of the training given in your setting is _____% through OJT _____% through CL.

When the demand for labor is high in an occupation, training for it can best be supplied through _____ OJT _____ CL _____ Combination.

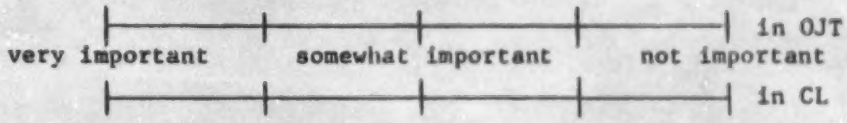
10. Frequency: The percent of tasks you teach all trainees that will be performed by them everyday after completion of training is _____% in OJT _____% in CL.

The total number of tasks you teach each trainee is _____ in OJT _____ in CL.

11. Criticality: The percent of tasks in your job setting that involve risk to or safety of your employees, equipment, or facilities is _____% in OJT _____% in CL.

Skills involving high risk may be best acquired through _____ OJT _____ CL _____ Combination.

12. Uniformity: The importance of having a task performed uniformly (i.e., in exactly the same way by all trainees is:



Greater uniformity of trainee job/task performance can best be attained through _____ OJT _____ CL _____ Combination.

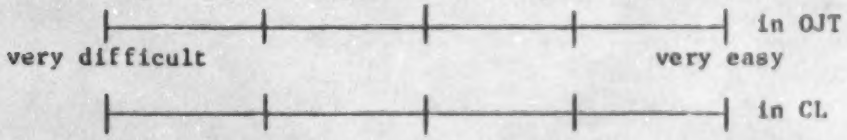
13. Complexity: The average time required for a trainee to learn a complex task to acceptable quality standards is _____ in OJT _____ in CL.

The training mode best suited for teaching complex tasks is _____ OJT _____ CL.

If the job is relatively easy to learn, the skill can best be developed through _____ OJT _____ CL _____ Combination.

14. Quality Control: The average time required for a trainee to learn to produce work of acceptable quality is _____ in OJT _____ in CL.

Training for producing work of acceptable quality is:



15. Instrumentality: The percent of tasks in your training program that require skills in reading, computing, and communicating is _____% in OJT _____% in CL.

Job tasks which require basic educational skills are best taught in _____ OJT _____ CL _____ Combination.

16. Prior Experience: The percent of tasks in which the "average" trainee already has some job relevant behaviors before entering training is _____% for OJT _____% for CL.

    Trainees that have relevant prior experience can best be trained in _____ OJT _____ CL _____ Combination.

17. Abilities and aptitudes: Trainees who acquire skills slowly can be best trained in the skills of this job through _____ OJT _____ CL _____ Combination.

18. Disabilities: Trainees with physical skill deficits can learn to master tasks better through _____ OJT _____ CL _____ Combination.

19. Preferred learning modes: Which training mode is preferred by the trainees for learning the skills of the job? _____ OJT _____ CL _____ Combination.

    In your opinion, which training mode has been best for you for learning the skills of your job? _____ OJT _____ CL _____ Combination.

20. Judgment of performance of graduates: The percentage of "graduates" who are promoted to higher status jobs after one year of working for a competitive wage is _____% through OJT _____% through CL _____% through Combination.

    In your opinion, which training method produces the most competent employees? _____ OJT _____ CL _____ Combination.

21. Ports of entry: In what percent of the occupations for which you provide training is the trainee's entry into the occupation controlled by a licensing board or agency? _____%

    In what occupation are such regulations most important? _____
    _____.

    For this occupation, does the agency regulate the amount of training required for entry into the occupation? _____ Yes _____ No

    If the agency specifies the type of training, which do they specify? _____ OJT _____ CL _____ Combination

22. Screening device: What percentage of trainees are required to complete screening (i.e., security check, physical-psychological exams) before being allowed to complete/graduate from the program?
    _____% (OJT) _____% (CL)

    The use of training as a screening device for both hiring and promotion can best be accomplished through _____ OJT _____ CL _____ Combination.

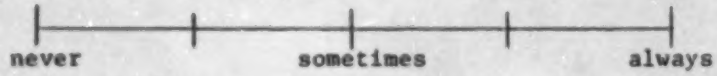
23. Passage of time: What percentage of trainees who have completed training are retained in the training program because an actual job is not readily available? _____% OJT _____% CL _____% Combination.

The time interval between completion of the training program and actual job placement is: _____ days for OJT _____ days for CL _____ days for Combination.

What percentage of trainees have an unacceptable loss of proficiency with a time interval of _____ months between graduation and actual job performance? _____% OJT _____% CL _____% Combination.

What percentage of skills require retraining when there is a _____ month interval between graduation and actual job placement? _____% OJT _____% CL _____% Combination.

24. History and pragmatism: How often is the decision to use OJT, CL, or a combination of both based on traditional training methods (e.g., "we've always done it this way" or "everyone else does it this way")?



25. Evaluation of Training: The quality of training can most economically be assessed in _____ OJT _____ CL _____ Combination.

The quality of training can most accurately be assessed in _____ OJT _____ CL _____ Combination.

26. Financial considerations: If you had adequate financial support, would you train using _____ OJT _____ CL _____ Combination?

Existing financial constraints encourage use of _____ OJT _____ CL _____ Combination.

APPENDIX D

Criteria, Instruction of Persons With Handicaps

Revised
2/27/79

COVER PAGE

Study # 35

VOCATIONAL AND TECHNICAL EDUCATION
BUREAU OF EDUCATIONAL RESEARCH
UNIVERSITY OF ILLINOIS

Name (last, first, m.i.) _____

_____

Address _____

_____

Telephone (AC ___) _____

Trainee Handicap (circle ONLY one)

	Level of Handicap		
Area of Handicap	Mild	Moderate	Severe
(1) Physical	01	02	03
(2) Cognitive	04	05	06
(3) Visual	07	08	09
(4) Auditory	10	11	12
(5) Emotional	13	14	15
(6) Speech	16	17	18
(7) Multiple	19	20	21

Revised
2/27/79

FOR OFFICE USE	Deck 1
Quest. # _____	1-3
Study # _____	4-5

VOCATIONAL AND TECHNICAL EDUCATION
BUREAU OF EDUCATIONAL RESEARCH
UNIVERSITY OF ILLINOIS

CRITERIA, INSTRUCTION OF PERSONS WITH HANDICAPS

(Phase I - Questionnaire)

1. Background Information of the Respondent

a. Job title _____

_____

[OTC ____] 6-8

b. Total months in present job _____ [_____] 9-12

c. Organization _____

_____

[_____] 13-14

d. Address _____

_____

[_____] 15-16

e. Respondent category (circle one)

- Group 0 Counselor. 1 17
- Group 1 Administrator. 2
- Group 2 Trainer. 3
- Group 3 Employer 4

2. Handicapping Condition of Trainees

a. Area of handicap:

(1) Physical deficit - loss of ability to move part or parts of body, paralysis.

(2) Cognitive deficit - mental retardation.

(3) Visual deficit - loss of peripheral vision, restriction of visual field, blind in both eyes.

(4) Auditory deficit - hard of hearing, deafness with understandable speech, deafness and unable to speak clearly.

(5) Emotional deficit - mental or emotional illness, history of treatment for either mental or emotional illness.

(6) Speech deficit - aphasia, articulation errors, stuttering.

(7) Multiple deficit (specify). _____

_____

_____

b. Level of handicap:

(1) Mild - capable of independent functioning when provided guidance and training.

(2) Moderate - usually capable of attaining semi-independent functioning when considerable training and assistance is provided.

(3) Severe - usually remains dependent, requiring training in all areas of functioning, e.g., basic hygiene, language, and social competence.

c. Conditions of Trainees (circle ONLY one):

Area of Handicap	/ Level of Handicap			
	Mild	Moderate	Severe	
(1) Physical	01	02	03	18-19
(2) Cognitive	04	05	06	
(3) Visual	07	08	09	
(4) Auditory	10	11	12	
(5) Emotional	13	14	15	
(6) Speech	16	17	18	
(7) Multiple	19	20	21	

3. Description of Training Conducted

Note: The respondent reads the descriptions of on-the-job training (OJT) and formal technical training - classroom/laboratory (CL) and chooses the most accurate description for the type of training provided including a "combination" (COMB) when both types of training are used. Select only one type of training, i.e., OJT, CL, or COMB.

Definitions:

"On-the-job training" (OJT) encompasses all self-study knowledge and job experience acquired by a trainee while working at his or her assigned job.

"Formal technical training" (CL) is traditional or conventional classroom or laboratory instruction in which the instructor and student regularly meet at a specific time and place for the primary purpose of teaching and learning.

The objective of both of these methods of training is assumed to be the mastery by the trainee of specific knowledges and skills needed on a job. In OJT the teaching and learning usually has a lower priority than producing goods or services, and in CL the production of goods and services always has lower priority than does teaching and learning (Evans, Holter, and Stern, 1976).

☐ AM

Time interview began: _____ ☐ PM

4. Training Provided (circle ONLY one)

a. Type of training provided?

OJT. . . 1 26

CL . . . 2

COMB . . 3

[1 2 3 4 5] 21

comment(s) _____

_____

_____

b. What is the training designed to accomplish?

Upgrading current employees. 1 22

Entry training for new employees . . . 2

Combination. 3

[1 2 3 4 5] 23

comment(s) _____

_____

_____

c. Training leads

to entry level performance on a specific job. 1 24

to greater responsibility (progression) on a specific job 2

to entry level and to greater responsibility on a specific job. . 3

to transfer to a related occupation 4

[1 2 3 4 5] 25

comment(s) _____

_____

_____

d. Training is designed for employment

on the same job and for the same employer 1 26

in the same occupation, with the same employer, but different job setting 2

in the same occupation but different employer 3

all of the above. 4

[1 2 3 4 5] 27

comment(s) _____

_____

_____

e. Is training given by a person who has considerable experience in the occupation being taught?

Yes. . . 1 28

No . . . 2

[1 2 3 4 5] 29

comment(s) _____

_____

_____

f. The training is provided by

the training station employer?

Yes. . . 1 30

No . . . 2

the eventual employer?

Yes. . . 3 31

No . . . 4

both of the above?

Yes. . . 1 32

No . . . 2

[1 2 3 4 5] 33

comment(s) _____

_____

_____

g. Does the method of training require written materials for the trainee to study?

Yes. . . 1 34

No . . . 2

[1 2 3 4 5] 35

comment(s) _____

_____

_____

5. Institutional Criteria

a. Cost:

(1) The average cost of training one graduate is

($)_____ 36-40

[1 2 3 4 5] 41

(2) The training method which is the least cost-effective is

OJT. . . 1 42

CL . . . 2

COMB . . 3

[1 2 3 4 5] 43

(3) With adequate financial support the most cost-effective training can best be accomplished using

OJT. . . 1 44

CL . . . 2

COMB . . 3

[1 2 3 4 5] 45

(4) Existing financial constraints encourage the use of

OJT. . . 1 46

CL . . . 2

COMB . . 3

[1 2 3 4 5] 47

comment(s) _____

_____

_____

b. Capability:

(1) The number of qualified applicants for each vacant position on the training staff is

OJT _____ 48-50

CL _____ 51-53

COMB_____ 54-56

[1 2 3 4 5] 57

(2) The most capabable instructors for training personnel to accomplish tasks are usually found in

OJT 1 58

CL. 2

COMB. 3

NO DIFFERENCE . . 4

[1 2 3 4 5] 59

comment(s) _____

_____

_____

c. Philosophy and Policy:

(1) The expectations of your administrator for the success of your training program are

	Low		Med.		High	Unk.	
(for OJT)	1	2	3	4	5	8	60
(for CL)	1	2	3	4	5	8	61
(for COMB)	1	2	3	4	5	8	62

[1 2 3 4 5] 63

(2) Based on the policy of your organization the type of training preferred is

OJT 1 64

CL. 2

COMB. 3

NO PREFERENCE . . 4

[1 2 3 4 5] 65

comment(s) _____

_____

_____

d. Availability/Suitability of Physical Resources:

(1) What percent of the equipment and/or facilities used by the trainee are typical or identical to those they will encounter on the job?

Percent of probability

OJT _____ 66-68

CL _____ 69-71

COMB_____ 72-74

[1 2 3 4 5] 75

(2) The use of actual job conditions is usually more feasible in

OJT. . . 1 76

CL . . . 2

COMB . . 3

[1 2 3 4 5] 77

comment(s) _____ 78-79/BK

_____

_____

e. Reality of Atmosphere:

(1) Trainees are trained in a work atmosphere (i.e., breaks, work shifts, etc.) that is typical or identical to the conditions of the actual job

Percent of time 80 | 1 1-3 | D U P

OJT _____ 4-6

CL _____ 7-9

COMB _____ 10-12

[1 2 3 4 5] 13

(2) Realism of training can best be created with

OJT. . . 1 14

CL . . . 2

COMB . . 3

[1 2 3 4 5] 15

comment(s) _____

_____

_____

f. Screening Device:

(1) What percentage of trainees are required to complete screening (e.g., security check, physical-psychological exams, etc.) before being allowed to complete/graduate from the program?

Percent _____ 16-18

None 108

Unknown 998

[1 2 3 4 5] 19

(2) The use of training as a screening device for both hiring and promotion can best be accomplished through

OJT. . . 1 20
CL . . . 2
COMB . . 3
[1 2 3 4 5] 21

comment(s) _____

_____

_____

g. History and Pragmatism:

(1) Consider the following definitions:

(a) Tradition means "we've always done it this way."

(b) Data means "research indicates that this is the most efficient way to do it."

(2) An organization which usually uses OJT tends to choose that method of training on the basis of

TRADITION. . . 1 22
DATA 2
BOTH 3
UNKNOWN. . . . 8
[1 2 3 4 5] 23

(3) An organization which usually uses CL tends to choose that method of training on the basis of

TRADITION. . . 1 24
DATA 2
BOTH 3
UNKNOWN. . . . 8
[1 2 3 4 5] 25

(4) An organization which usually uses a COMB tends to choose that method of training on the basis of

TRADITION. . . 1 26
DATA 2
BOTH 3
UNKNOWN. . . . 8
[1 2 3 4 5] 27

comment(s) _____

_____

_____

h. Evaluation of Training:

An appraisal of the quality of training can most economically be assessed in

OJT. . . 1 28
CL . . . 2
COMB . . 3
UNK. . . 8
[1 2 3 4 5] 29

comment(s) _____

_____

_____

6. Quality and Speed Related Criteria

a. Number of Trained Personnel Required:

(1) The largest number of personnel (of all types) actually in training at one time on your site is

	Number of Personnel	
OJT	_____	30-32
CL	_____	33-35
COMB	_____	36-38
[1 2 3 4 5]		39
TOTAL	_____	40-44

(2) A large flow of trainees can best be trained through

OJT. . . 1	45
CL . . . 2	
COMB . . 3	
UNK. . . 8	
[1 2 3 4 5]	46

comment(s) _____

_____

_____

b. Persistence of Demand for Trained Personnel:

(1) Trained personnel for jobs in this occupational category will be needed for

years _____	47-48
unknown 98	
[1 2 3 4 5]	49

(2) The average annual requirement for trained personnel to fill jobs in this occupational category is

persons _____ 50-52

unknown 998

[1 2 3 4 5] 53

(3) A substantial demand for this job skill has existed for

years _____ 54-55

unknown 98

[1 2 3 4 5] 56

(4) When trained personnel are required in the job market over an extended period of time, the best method of training is

OJT. . . 1 57

CL . . . 2

COMB . . 3

[1 2 3 4 5] 58

comment(s) _____

_____

_____

c. Need to Minimize Training Time:

(1) The average number of months to train a trainee is

OJT _____ 59-60

CL _____ 61-62

COMB _____ 63-64

[1 2 3 4 5] 65

(2) When time for training is short, best results can be obtained via

OJT. . . 1 66

CL . . . 2

COMB . . 3

[1 2 3 4 5] 67

comment(s) _____

_____

_____

d. State of the Business Cycle:

(1) The percent of trained personnel earning a competitive wage within 12 months after completion of the training received in your program is

Percent of Personnel

OJT _____ 68-70

CL _____ 71-73

COMB_____ 74-76

[1 2 3 4 5] 77

(2) When the demand for workers is high in this occupation, training for it can best be supplied through

OJT. . . 1 78

CL . . . 2

COMB . . 3

[1 2 3 4 5] 79

comment(s) _____

_____

_____

7. Job Related Criteria

a. Frequency:

(1) In choosing tasks to be taught in a training program it is usual to teach tasks which are performed in a job by almost all workers and not to teach tasks which workers rarely perform.

(2) What percent of tasks taught in your program are performed on-the-job by the average graduate? 80 | 2 1-3 | D U P

percent _____ 4-6

[1 2 3 4 5] 7

(3) Tasks which are performed on-the-job by graduates at least once every week are best taught by

OJT. . . 1 8

CL . . . 2

COMB . . 3

[1 2 3 4 5] 9

comment(s) _____

_____

_____

b. Criticality:

(1) The percent of tasks in your training program that involves risk to or the safety of your trainees, equipment, or facilities is

Percent of Task

OJT _____ 10-12

NONE 108

CL _____ 13-15

NONE 108

COMB _____ 16-18

NONE 108

[1 2 3 4 5] 19

(2) Skills involving high risk may be best acquired through

OJT. . . 1 20

CL . . . 2

COMB . . 3

[1 2 3 4 5] 21

comment(s) _____

_____

_____

c. Uniformity:

(1) The importance of having a task performed uniformly, i.e., in exactly the same way by <u>all</u> trainees is

	Unimportant		Borderline		Important	Unknown	
(in OJT)	1	2	3	4	5	8	22
(in CL)	1	2	3	4	5	8	23
(in COMB)	1	2	3	4	5	8	24

[1 2 3 4 5] 25

(2) Greater uniformity of trainee job/task performance can best be attained through

OJT. . . 1 26

CL . . . 2

COMB . . 3

[1 2 3 4 5] 27

comment(s) _____

_____

_____

NOTE: Interviewer has the option of suggesting to the respondent that a five-ten minute pause be taken at this point.

d. Complexity:

(1) The average number of days required for a trainee to learn a <u>complex</u> task to acceptable quality standards is

OJT _____ 28-30

CL _____ 31-33

COMB _____ 34-36

[1 2 3 4 5] 37

(2) The method of training best suited for teaching complex tasks is

OJT. . . 1 38

CL . . . 2

COMB . . 3

[1 2 3 4 5] 39

(3) If the job is relatively easy to learn, the skill can best be developed through

OJT. . . 1 40

CL . . . 2

COMB . . 3

[1 2 3 4 5] 41

comment(s) _____

_____

_____

e. Judgement of Performance of Graduates:

(1) Assuming that graduates of this program are receiving a competitive wage upon employment,

(a) how many months after employment are handicapped graduates usually promoted to a higher status job?

months _____ 42-43

unknown 98

[1 2 3 4 5] 44

(b) what percentage of all graduates are promoted to a higher status job after cited period above?

percent _____ 45-47

unknown 998

[1 2 3 4 5] 48

(c) what percentage of handicapped graduates receiving OJT are promoted to a higher status job after cited period above?

percent _____ 49-51

unknown 998

[1 2 3 4 5] 52

(d) what percentage of handicapped graduates receiving CL are promoted to a higher status job after cited period above?

percent _____ 53-55

unknown 998

[1 2 3 4 5] 56

(e) what percentage of handicapped graduates receiving COMB are promoted to a higher status job after cited period above?

percent _____ 57-59

unknown 998

[1 2 3 4 5] 60

(2) Which training method produces the most competent employees after cited period above?

OJT. . . 1 61

CL . . . 2

COMB . . 3

[1 2 3 4 5] 62

comment(s) _____

_____

_____

f. Passage of Time:

(1) What percentage of trainees who have completed training are retained in the training program because an actual job is not readily available?

percent_____ 63-65

none 108

unknown 998

[1 2 3 4 5] 66

(2) The usual time interval between completion of the training program and actual job placement is

days _____ 67-70

none 1008

unknown 9998

[1 2 3 4 5] 71

(3) An unacceptable loss of potential job efficiency occurs when the time interval between graduation and actual job entry exceeds a given period of time. The loss of job efficiency for your graduates occurs after

days _____ 72-74

unknown_____

[1 2 3 4 5] 75

(4) What percentage of graduates have experienced this loss of job efficiency?

percent_____ 76-78

none 108

unknown 998

[1 2 3 4 5] 79

(5) What percentage of skills require retraining because of this time interval? 80|3 1-3|DUP

percent_____ 4-6

none 108

unknown 998

[1 2 3 4 5] 7

(6) Graduates do not require (or seldom require) retraining because of this time interval, when they receive training via

OJT. . . 1 8

CL . . . 2

COMB . . 3

[1 2 3 4 5] 9

comment(s) _____

g. Instrumentality:

(1) The percent of tasks that your graduates will be expected to perform that require skills in reading, computing, and/or speaking is

percent_____ 10-12

none 108

unknown 998

[1 2 3 4 5] 13

(2) Job tasks which require basic educational skills are best taught through

OJT. . . 1 14

CL . . . 2

COMB . . 3

[1 2 3 4 5] 15

comment(s) _____

_____

_____

h. Quality Control:

(1) The average time required for a trainee to learn to produce work of acceptable quality using the OJT method is

days _____ 16-18

unknown 998

[1 2 3 4 5] 19

using the CL method is

days _____ 20-21

unknown 998

[1 2 3 4 5] 22

using the COMB method is

days _____ 23-25

unknown 998

[1 2 3 4 5] 26

(2) Training for producing work of acceptable quality in your agency is

	Difficult		Borderline		Easy	Unknown	
(via OJT)	1	2	3	4	5	8	27
(via CL)	1	2	3	4	5	8	28
(via COMB)	1	2	3	4	5	8	29

[1 2 3 4 5] 30

comment(s) _____

_____

_____

i. Ports of Entry:

(1) In which jobs for which you provide training is the trainees entry into the job controlled by a licensing board or agency?

None, skip to Q. 8. . . [998] 31-33

(a) Job: _____

OTC: __ _____ 34-36

(b) Job: _____

OTC: _____ 37-39

(c) Job: _____

OTC: _____ 40-42

[1 2 3 4 5] 43

(2) For each such job does the agency regulate the amount of training required for job entry?

(a) Job : _____

[OTC: _____] 44-46

Yes. . . 1 47

No . . . 2

Unk. . . 8

(b) Job: _____

[OTC: _____] 48-50

Yes. . . 1 51

No . . . 2

Unk. . . 8

(c) Job: _____

[OTC: _____] 52-54

Yes. . . 1 55

No . . . 2

Unk. . . 8

[1 2 3 4 5] 56

(3) If an agency specifies the type of training, which do they specify for each job?

(a) Job: _____

[OTC: _____] 57-59

OJT. . . 1 60

CL . . . 2

COMB . . 3

UNK. . . 8

(b) Job: _____

[OTC: _____] 61-63

OJT. . . 1 64

CL . . . 2

COMB . . 3

UNK. . . 8

(c) Job: _____

[OTC: _____] 65-67

OJT. . . 1 68

CL . . . 2

COMB . . 3

UNK. . . 8

[1 2 3 4 5] 69

comment(s) _____

_____

_____

8. Trainee Background Criteria

a. Preferred Learning Method(s):

(1) Which training method is preferred by the trainees for learning the skills of the job?

OJT. . . 1 70

CL . . . 2

COMB . . 3

UNK. . . 8

[1 2 3 4 5] 71

(2) Which training method have you preferred for learning the skills of your job?

OJT. . . 1 72
CL . . . 2
COMB . . 3
UNK. . . 8
[1 2 3 4 5] 73

comment(s) _____

_____

_____

b. Disabilities:

(1) Trainees with physical skill deficits can learn to master tasks better through

OJT. . . 1 74
CL . . . 2
COMB . . 3
UNK. . . 8
[1 2 3 4 5] 75

(2) Trainees with cognitive skill deficits can learn to master tasks better through

OJT. . . 1 76
CL . . . 2
COMB . . 3
UNK. . . 8
[1 2 3 4 5] 77

(3) Trainees with visual deficits can learn to master tasks better through

OJT. . . 1 78

CL . . . 2

COMB . . 3

UNK. . . 8

[1 2 3 4 5] 79

(4) Trainees with auditory deficits can learn to master tasks better through 80 | 4 1-3 | DUP

OJT. . . 1 4

CL . . . 2

COMB . . 3

UNK. . . 8

[1 2 3 4 5] 5

(5) Trainees with multiple deficits can learn to master tasks better through

OJT. . . 1 6

CL . . . 2

COMB . . 3

UNK. . . 8

[1 2 3 4 5] 7

comment(s) _____

_____

_____

c. Abilities and Aptitudes:

(1) Trainees who acquire skills slowly can be best trained to perform tasks of this job through

OJT. . . 1 8

CL . . . 2

COMB . . 3

UNK. . . 8

[1 2 3 4 5] 9

comment(s) _____

_____

_____

d. Prior Experience:

(1) The percent of job relevant task performance behaviors which the "average" trainee has before entering

(a) Unknown, skip to 8d(2). . . 998 10-12

(b) OJT training is . . .percent_____ 13-15

none 108

(c) CL training is. . . .percent_____ 16-18

none 108

(d) COMB training is. . .percent_____ 19-21

none 108

[1 2 3 4 5] 22

(2) Trainees that have these pre-training performance behaviors can best be trained through

OJT. . . 1 23

CL . . . 2

COMB . . 3

UNK. . . 8

[1 2 3 4 5] 24

comment(s) _____

_____

_____

25–79

80|5

APPENDIX E

Procedural Guide for Data Collection
— Code Book For Data Analysis —

Study #35
Vocational and Technical Education
Bureau of Educational Research
University of Illinois

CODE BOOK FOR DATA ANALYSIS

Criteria, Instruction of Persons with Handicaps

This study is being conducted by the Bureau of Educational Research to identify and quantify criteria used by human service delivery professionals when selecting vocational training methods for handicapped persons. That is, are the skills and knowledge best acquired in a classroom-laboratory environment, through on-the-job training, or through a combination of these? The questions to be answered by the data collected are:

1. What criteria are currently used for deciding if the handicapped are best taught a skill on-the-job or best taught in a school-like setting?
2. How do these criteria vary with type and severity of handicap?
3. How should these criteria and the use of these criteria be modified to increase client competence and aid advancement throughout the continuum leading to employment and promotion for the handicapped?

Survey Research Laboratory (SRL) is keypunching and analyzing the data from the questionnaire. The standard conventions apply —

1. Codes '0', '00', '000' etc. are for none or zero.
2. Codes '9', '99', '999' etc. are for no answer or no data.
3. Codes '8', '98', '998' etc. are for unknown or don't know.
4. Codes '7', '97', '997' etc. are for indefinite.
5. Codes '96', '996' etc. are for numerical responses that exceed the column code limit.
6. Numerical responses to open-ended questions. When coding responses which do not fill the column code limit, add leading zeros to the response up to the column code limit.

7. Percentages: When coding responses given as a percentage, add two leading zeros for one digit responses (e.g., 008%) and one leading zero for two digit responses (e.g., 014%).

8. Range of data: If ranges are given, the midpoint is used, i.e., 5-9 would be "7" or 5-8 would be "7".

9. Rounding of data: If rounding is necessary, round down when less than .5 and up for more than .5.

10. NA - Not applicable responses. Leave responses blank.

The standards for coding the confidence codes are as follows:

a. Code '1' is a firm or sure response with only one answer given.

b. Code '2' is a changed response which is recorded when two or more answers are given at first and a final answer is given by the respondent after negotiating or gaining additional definitive information.

c. Code '3' is an unsure response. This code is used when the respondent gives multiple responses from which a best possible "guess" is given.

d. Code '4' is a delayed response which means that the respondent had to locate or acquire the relevant data.

e. Code '5' is a refused response, that is, when the respondent does not have time to gain information or the data is inaccessible.

f. Code '9' is a no data or a no answer response.

g. NA - not applicable response. None of the codes are circled.

SRL will be coding only closed-ended questions. When comments are made during an interview, record those comments in the appropriate section for each question.

Unless other instructions are given, one answer code should be circled in pencil for each question. If more than one answer is volunteered ascertain

the qualifications of the respondent to give more than one response (e.g., Have you been administrator of both an OJT and CL program?). If a respondent is qualified, note that fact in the "comment" section.

Questionnaires should be given to Alain or Bruce to be verified and filed. The coding instructions for unusual items are given on the next page.

Study #35

Criteria, Instruction of Persons with Handicaps

Question #	Deck	Col.	Instructions
1a	1	6-8	Code three-digit occupational group from Dictionary of Occupational Titles (pp. xxxvi-xli).
1b	1	9-12	This may be less than 4 digits. Add leading zeros if necessary.
1c	1	13-14	Organizations coded with a first digit of: a. "0" are sheltered workshops, b. "1" are public employers, c. "2" are private employers, d. "3" are public school vocational programs, e. "4" are community college programs, f. "5" are private school programs, and g. "6" are state funding agencies.
1d	1	15-16	Code modified two-digit community college district code from State Plan for the Administration of Vocational & Technical Education in Illinois (pp. 90-91).
4a	1	20	Code "4", if all three responses apply.
4c	1	24	Code "5", if responses 1, 2, and 4 apply.
5a(1)	1	36-40	This may be less than 5 digits.
5b(1)	1	48-50	This may be less than 3 digits.
		51-53	Add leading zeros if necessary.
		54-56	

Study #35 (continued)

Criteria, Instruction of Persons with Handicaps

Question #	Deck	Col.	Instructions
6a(1)	2	30-32	Code like Q. 5b(1).
		33-35	
		36-38	
6b(1)	2	47-48	This may be less than 2 digits. Add leading zeros if necessary.
6b(2)	2	50-52	Code like Q. 5b(1).
6b(3)	2	54-55	Code like Q. 6b(1).
7d(1)	3	28-30	Code like Q. 5b(1).
		31-33	
		34-36	
7e(1)	3	42-43	Code like Q. 6b(1).
7f(2)	3	67-70	Code like Q. 1b.
7f(3)	3	72-74	Code like Q. 5b(1).
7f(6)	4	8	Code "4" if all three responses are given.
7h(1)	4	20-21 &22	Do not code. See Q. 9 and code like Q. 5b(1).

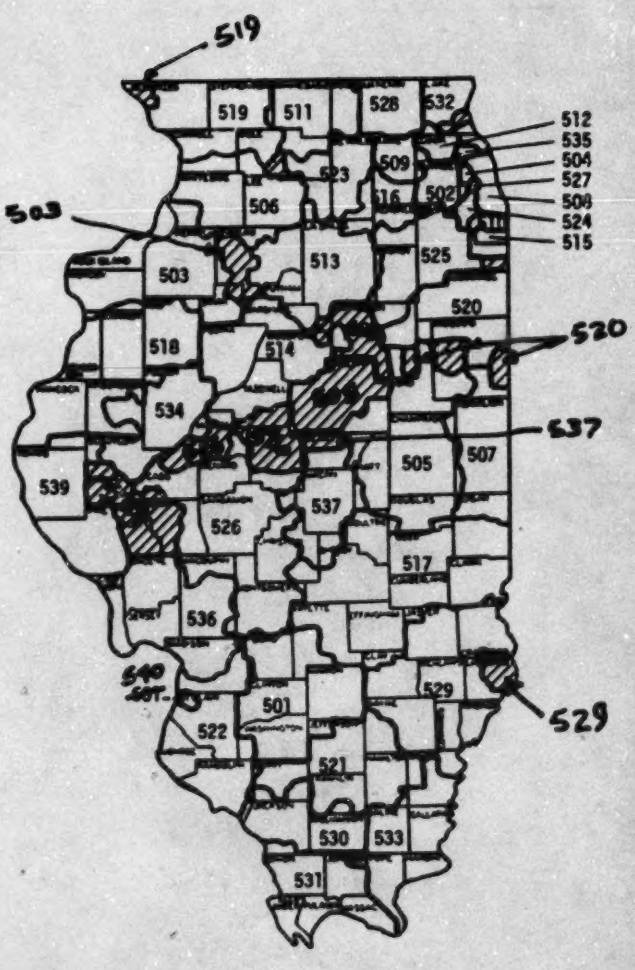
Study #35 (continued)

Criteria, Instruction of Persons with Handicaps

Question #	Deck	Col.	Instructions
7h(1)	4	16-18	Code like Q. 5b(1).
		23-25	
7i(1)	4	34-36	Code like Q. 1a.
		37-39	
		40-42	
7i(2)	4	44-46	Code like Q. 1a.
		48-50	
		52-54	
		57-59	
		61-63	
		65-67	

ILLINOIS PUBLIC COMMUNITY COLLEGE DISTRICTS

DISTRICT NUMBER	COMMUNITY COLLEGE
* 501	Kaskaskia College, Centralia
* 502	College of DuPage, Glen Ellyn
* 503	Black Hawk College, Moline and Kewanee
* 504	Triton College, River Grove
* 505	Parkland College, Champaign
* 506	Sauk Valley College, Dixon
507	Danville Junior College, Danville
* 508	City Colleges of Chicago, Chicago
* 509	Elgin Community College, Elgin
* 510	Thornton Community College, South Holland
* 511	Rock Valley College, Rockford
* 512	William Rainey Harper College, Palatine
* 513	Illinois Valley Community College, Oglesby
* 514	Illinois Central College, East Peoria
515	Prairie State College, Chicago Heights
* 516	Waubonsee Community College, Sugar Grove
* 517	Lake Land College, Mattoon
* 518	Carl Sandburg College, Galesburg
* 519	Highland Community College, Freeport
520	Kankakee Community College, Kankakee
* 521	Rend Lake College, Ina
522	Belleville Area College, Belleville
* 523	Kishwaukee College, Malta
524	Moraine Valley Community College, Palos Hills
525	Joliet Junior College, Joliet
526	Lincoln Land Community College, Springfield
527	Morton College, Cicero
* 528	McHenry County College, Crystal Lake
* 529	Illinois Eastern Community Colleges; Olney, Mt. Carmel and Robinson
* 530	John A. Logan College, Carterville
* 531	Shawnee College, Ullin
* 532	College of Lake County, Grayslake
533	Southeastern Illinois College, Harrisburg
534	Spoon River College, Canton
535	Oakton Community College, Morton Grove
536	Lewis and Clark Community College, Godfrey
537	Richland Community College, Decatur
539	John Wood Community College, Quincy
* ~~000~~ 540	State Community College of East St. Louis, East St. Louis



* Designated Post-secondary Area Vocational Centers

Organization Identity

Organization	Frequency	Code
Ray Graham Assoc. for Handicapped	////	01
Training Aids Division-Chanute AFB	/	11
Vetter Fairing Co.	/	21
Illinois Bell Telephone Co.	//	25
Decatur Eisenhower H.S.	///	31
Bloomington Area Vocational Center	/	32
Decatur Area Vocational Center	////	33
Bloomington Occupational Development Ctr.	//	02
Developmental Services Center Workshop Program	////	03
Springfield Public Schools	//	34
Stephan Decatur H.S.	//	35
D.V.R., Champaign & Bloomington	///	61
Marc Gold & Associates	/	22
Developmental Services Center Foodservice Program	/	04
Edwardsville H.S.	/	36
Ace Janitorial Contractors-Chanute AFB	/	23
Webster's Food Contractors-Chanute AFB	/	24
Parkland College	////	41
Hadley School for Blind	/	51
Staffing Section, Civ Personnel Chanute AFB	/	12
Placement & Testing U of I	/	13
DMHDD	/	62
East Central/DSC Workstudy	/	37
Rehab Center U of I	/	14

Extract of:

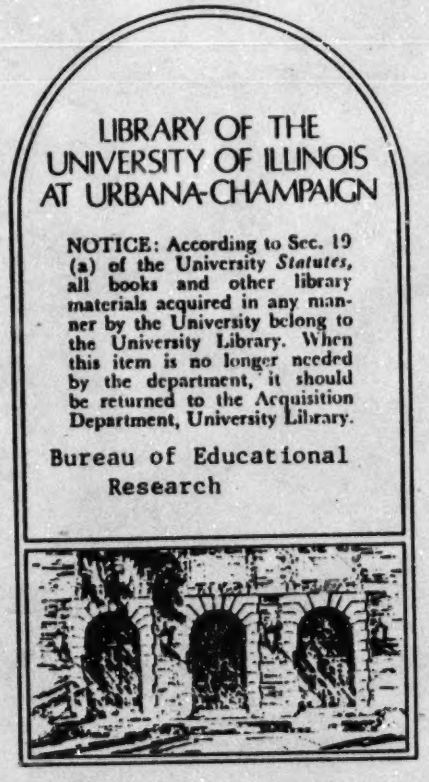
Dictionary of Occupational Titles

Fourth Edition, 1977

U.S. Department of Labor
Ray Marshall, Secretary

Employment and Training Administration
Ernest G. Green
Assistant Secretary for Employment and Training

U.S. Employment Service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Bureau of Educational Research

PROFESSIONAL, TECHNICAL, AND MANAGERIAL OCCUPATIONS

00/01 Occupations in architecture, engineering, and surveying
001 Architectural occupations
002 Aeronautical engineering occupations
003 Electrical/electronics engineering occupations
005 Civil engineering occupations
006 Ceramic engineering occupations
007 Mechanical engineering occupations
008 Chemical engineering occupations
010 Mining and petroleum engineering occupations
011 Metallurgy and metallurgical engineering occupations
012 Industrial engineering occupations
013 Agricultural engineering occupations
014 Marine engineering occupations
015 Nuclear engineering occupations
017 Drafters, n.e.c.
018 Surveying/cartographic occupations
019 Occupations in architecture, engineering, and surveying, n.e.c.

02 Occupations in mathematics and physical sciences
020 Occupations in mathematics
021 Occupations in astronomy
022 Occupations in chemistry
023 Occupations in physics
024 Occupations in geology
025 Occupations in meteorology
029 Occupations in mathematics and physical sciences, n.e.c.

04 Occupations in life sciences
040 Occupations in agricultural sciences
041 Occupations in biological sciences
045 Occupations in psychology
049 Occupations in life sciences, n.e.c.

05 Occupations in social sciences
050 Occupations in economics
051 Occupations in political science
052 Occupations in history
054 Occupations in sociology
055 Occupations in anthropology
059 Occupations in social sciences, n.e.c.

07 Occupations in medicine and health
070 Physicians and surgeons
071 Osteopaths
072 Dentists
073 Veterinarians
074 Pharmacists
075 Registered nurses
076 Therapists
077 Dietitians
078 Occupations in medical and dental technology
079 Occupations in medicine and health, n.e.c.

09 Occupations in education
090 Occupations in college and university education
091 Occupations in secondary school education
092 Occupations in preschool, primary school, and kindergarten education
094 Occupations in education of the handicapped
096 Home economists and farm advisers
097 Occupations in vocational education, n.e.c.
099 Occupations in education, n.e.c.

10 Occupations in museum, library, and archival sciences
100 Librarians
101 Archivists
102 Museum curators and related occupations
109 Occupations in museum, library, and archival sciences, n.e.c.

11 Occupations in law and jurisprudence
110 Lawyers
111 Judges
119 Occupations in law and jurisprudence, n.e.c.

12 Occupations in religion and theology
120 Clergy
129 Occupations in religion and theology, n.e.c.

13 Occupations in writing
131 Writers
132 Editors, publication, broadcast, and script
137 Interpreters and translators
139 Occupations in writing, n.e.c.

14 Occupations in art
141 Commercial artists: designers and illustrators, graphic arts
142 Environmental, product, and related designers
143 Occupations in photography
144 Fine artists: painters, sculptors, and related occupations
149 Occupations in art, n.e.c.

15 Occupations in entertainment and recreation
150 Occupations in dramatics
151 Occupations in dancing
152 Occupations in music
153 Occupations in athletics and sports
159 Occupations in entertainment and recreation, n.e.c.

16 Occupations in administrative specializations
160 Accountants and auditors
161 Budget and management systems analysis occupations
162 Purchasing management occupations
163 Sales and distribution management occupations
164 Advertising management occupations
165 Public relations management occupations
166 Personnel administration occupations
168 Inspectors and investigators, managerial and public service
169 Occupations in administrative specializations, n.e.c.

18 Managers and officials, n.e.c.
180 Agriculture, forestry, and fishing industry managers and officials
181 Mining industry managers and officials
182 Construction industry managers and officials
183 Manufacturing industry managers and officials
184 Transportation, communication, and utilities industry managers and officials
185 Wholesale and retail trade managers and officials
186 Finance, insurance, and real estate managers and officials
187 Service industry managers and officials
188 Public administration managers and officials
189 Miscellaneous managers and officials, n.e.c.

19 Miscellaneous professional, technical, and managerial occupations
191 Agents and appraisers, n.e.c.
193 Radio operators
194 Sound, film, and videotape recording, and reproduction occupations
195 Occupations in social and welfare work
196 Airplane pilots and navigators
197 Ship captains, mates, pilots, and engineers
198 Railroad conductors
199 Miscellaneous professional, technical, and managerial occupations, n.e.c.

CLERICAL AND SALES OCCUPATIONS

20 Stenography, typing, filing, and related occupations
201 Secretaries
202 Stenographers
203 Typists and typewriting-machine operators

205 Interviewing clerks
206 File clerks
207 Duplicating-machine operators and tenders
208 Mailing and miscellaneous office machine operators
209 Stenography, typing, filing, and related occupations, n.e.c.

21 **Computing and account-recording occupations**
210 Bookkeepers and bookkeeping-machine operators
211 Cashiers and tellers
213 Electronic and electromechanical data processors
214 Billing and rate clerks
215 Payroll, timekeeping, and duty-roster clerks
216 Accounting and statistical clerks
217 Account-recording-machine operators, n.e.c.
219 Computing and account-recording occupations, n.e.c.

22 **Production and stock clerks and related occupations**
221 Production clerks
222 Shipping, receiving, stock, and related clerical occupations
229 Production and stock clerks and related occupations, n.e.c.

23 **Information and message distribution occupations**
230 Hand delivery and distribution occupations
235 Telephone operators
236 Telegraph operators
237 Information and reception clerks
238 Accommodation clerks and gate and ticket agents
239 Information and message distribution occupations, n.e.c.

24 **Miscellaneous clerical occupations**
241 Investigators, adjusters, and related occupations
243 Government service clerks, n.e.c.
245 Medical service clerks, n.e.c.
247 Advertising-service clerks, n.e.c.
248 Transportation-service clerks, n.e.c.
249 Miscellaneous clerical occupations, n.e.c.

25 **Sales occupations, services**
250 Sales occupations, real estate and insurance
251 Sales occupations, business and financial services
252 Sales occupations, transportation services
253 Sales occupations, utilities
254 Sales occupations, printing and advertising
259 Sales occupations, services, n.e.c.

26 **Sales occupations, consumable commodities**
260 Sales occupations, agricultural and food products
261 Sales occupations, textile products, apparel, and notions
262 Sales occupations, chemicals, drugs, and sundries
269 Sales occupations, miscellaneous consumable commodities, n.e.c.

27 **Sales occupations, commodities, n.e.c.**
270 Sales occupations, home furniture, furnishings, and appliances
271 Sales occupations, electrical goods, except home appliances
272 Sales occupations, farm and gardening equipment and supplies
273 Sales occupations, transportation equipment, parts, and supplies
274 Sales occupations, industrial and related equipment and supplies
275 Sales occupations, business and commercial equipment and supplies
276 Sales occupations, medical and scientific equipment and supplies
277 Sales occupations, sporting, hobby, stationery, and related goods
279 Sales occupations, miscellaneous commodities, n.e.c.

29 **Miscellaneous sales occupations**
290 Sales clerks
291 Vending and door to door selling occupations
292 Route sales and delivery occupations
293 Solicitors
294 Auctioneers
295 Rental clerks
296 Shoppers
297 Sales promotion occupations
298 Merchandise displayers
299 Miscellaneous sales occupations, n.e.c.

SERVICE OCCUPATIONS

30 **Domestic service occupations**
301 Household and related work
302 Launderers, private family
305 Cooks, domestic
309 Domestic service occupations, n.e.c.

31 **Food and beverage preparation and service occupations**
310 Hosts/hostesses and stewards/stewardesses, food and beverage service, except ship stewards/stewardesses
311 Waiters/waitresses, and related food service occupations
312 Bartenders
313 Chefs and cooks, hotels and restaurants
315 Miscellaneous cooks, except domestic
316 Meatcutters, except in slaughtering and packing houses
317 Miscellaneous food and beverage preparation occupations
318 Kitchen workers, n.e.c.
319 Food and beverage preparation and service occupations, n.e.c.

32 **Lodging and related service occupations**
320 Boarding-house and lodging-house keepers
321 Housekeepers, hotels and institutions
323 Housecleaners, hotels, restaurants, and related establishments
324 Bellhops and related occupations
329 Lodging and related service occupations, n.e.c.

33 **Barbering, cosmetology, and related service occupations**
330 Barbers
331 Manicurists
332 Hairdressers and cosmetologists
333 Make-up occupations
334 Masseurs and related occupations
335 Bath attendants
338 Embalmers and related occupations
339 Barbering, cosmetology, and related service occupations, n.e.c.

34 **Amusement and recreation service occupations**
340 Attendants, bowling alley and billiard parlor
341 Attendants, golf course, tennis court, skating rink, and related facilities
342 Amusement device and concession attendants
343 Gambling hall attendants
344 Ushers
346 Wardrobe and dressing-room attendants
349 Amusement and recreation service occupations, n.e.c.

35 **Miscellaneous personal service occupations**
350 Ship stewards/stewardesses and related occupations
351 Train attendants
352 Hosts/hostesses and stewards/stewardesses, n.e.c.
353 Guides
354 Unlicensed birth attendants and practical nurses
355 Attendants, hospitals, morgues, and related health services
357 Baggage handlers
358 Checkroom, locker room, and restroom attendants
359 Miscellaneous personal service occupations, n.e.c.

36 **Apparel and furnishings service occupations**
361 Laundering occupations
362 Dry cleaning occupations
363 Pressing occupations
364 Dyeing and related occupations
365 Shoe and luggage repairer and related occupations
366 Boothblacks and related occupations
369 Apparel and furnishings service occupations, n.e.c.

37 **Protective service occupations**
371 Crossing tenders and bridge operators
372 Security guards and correction officers, except crossing tenders
373 Fire fighters, fire department

375 Police officers and detectives, public service
376 Police officers and detectives, except in public service
377 Sheriffs and bailiffs
378 Armed forces enlisted personnel
379 Protective service occupations, n.e.c.

38 Building and related service occupations
381 Porters and cleaners
382 Janitors
383 Building pest control service occupations
388 Elevator operators
389 Building and related service occupations, n.e.c.

AGRICULTURAL, FISHERY, FORESTRY, AND RELATED OCCUPATIONS

40 Plant farming occupations
401 Grain farming occupations
402 Vegetable farming occupations
403 Fruit and nut farming occupations
404 Field crop farming occupations, n.e.c.
405 Horticultural specialty occupations
406 Gardening and groundskeeping occupations
407 Diversified crop farming occupations
408 Plant life and related service occupations
409 Plant farming and related occupations, n.e.c.

41 Animal farming occupations
410 Domestic animal farming occupations
411 Domestic fowl farming occupations
412 Game farming occupations
413 Lower animal farming occupations
418 Animal service occupations
419 Animal farming occupations, n.e.c.

42 Miscellaneous agricultural and related occupations
421 General farming occupations
429 Miscellaneous agricultural and related occupations, n.e.c.

44 Fishery and related occupations
441 Net, seine, and trap fishers
442 Line fishers
443 Fishers, miscellaneous equipment
446 Aquatic life cultivation and related occupations
447 Sponge and seaweed gatherers
449 Fishery and related occupations, n.e.c.

45 Forestry occupations
451 Tree farming and related occupations
452 Forest conservation occupations
453 Occupations in harvesting forest products, except logging
454 Logging and related occupations
455 Log grading, scaling, sorting, rafting, and related occupations
459 Forestry occupations, n.e.c.

46 Hunting, trapping, and related occupations
461 Hunting and trapping occupations

PROCESSING OCCUPATIONS

50 Occupations in processing of metal
500 Electroplating occupations
501 Dip plating occupations
502 Melting, pouring, casting, and related occupations
503 Pickling, cleaning, degreasing, and related occupations
504 Heat-treating occupations
505 Metal spraying, coating, and related occupations
509 Occupations in processing of metal, n.e.c.

51 Ore refining and foundry occupations
510 Mixing and related occupations
511 Separating, filtering, and related occupations
512 Melting occupations
513 Roasting occupations
514 Pouring and casting occupations
515 Crushing and grinding occupations
518 Molders, coremakers, and related occupations
519 Ore refining and foundry occupations, n.e.c.

52 Occupations in processing of food, tobacco, and related products
520 Mixing, compounding, blending, kneading, shaping, and related occupations
521 Separating, crushing, milling, chopping, grinding, and related occupations
522 Culturing, melting, fermenting, distilling, saturating, pickling, aging, and related occupations
523 **Heating, rendering, melting, drying, cooling, freezing, and related occupations**
524 Coating, icing, decorating, and related occupations
525 Slaughtering, breaking, curing, and related occupations
526 Cooking and baking occupations, n.e.c.
529 Occupations in processing of food, tobacco, and related products, n.e.c.

53 Occupations in processing of paper and related materials
530 Grinding, beating, and mixing occupations
532 Cooking and drying occupations
533 Cooling, bleaching, screening, washing, and related occupations
534 Calendering, sizing, coating, and related occupations
535 Forming occupations, n.e.c.
539 Occupations in processing of paper and related materials, n.e.c.

54 Occupations in processing of petroleum, coal, natural and manufactured gas, and related products
540 Mixing and blending occupations
541 Filtering, straining, and separating occupations
542 Distilling, subliming, and carbonizing occupations
543 Drying, heating, and melting occupations
544 Grinding and crushing occupations
546 Reacting occupations, n.e.c.
549 Occupations in processing of petroleum, coal, natural and manufactured gas, and related products, n.e.c.

55 Occupations in processing of chemicals, plastics, synthetics, rubber, paint, and related products
550 Mixing and blending occupations
551 Filtering, straining, and separating occupations
552 Distilling occupations
553 Heating, baking, drying, seasoning, melting, and heat-treating occupations
554 Coating, calendering, laminating, and finishing occupations
555 Grinding and crushing occupations
556 Casting and molding occupations, n.e.c.
557 Extruding occupations
558 Reacting occupations, n.e.c.
559 Occupations in processing of chemicals, plastics, synthetics, rubber, paint, and related products, n.e.c.

56 Occupations in processing of wood and wood products
560 Mixing and related occupations
561 Wood preserving and related occupations
562 Saturating, coating, and related occupations, n.e.c.
563 Drying, seasoning, and related occupations
564 Grinding and chopping occupations, n.e.c.
569 Occupations in processing of wood and wood products, n.e.c.

57 Occupations in processing of stone, clay, glass, and related products
570 Crushing, grinding, and mixing occupations
571 Separating occupations
572 Melting occupations
573 Baking, drying, and heat-treating occupations
574 Impregnating, coating, and glazing occupations
575 Forming occupations
579 Occupations in processing of stone, clay, glass, and related products, n.e.c.

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58 Occupations in processing of leather, textiles, and related products
580 Shaping, blocking, stretching, and tentering occupations
581 Separating, filtering, and drying occupations
582 Washing, steaming, and saturating occupations
583 Ironing, pressing, glazing, staking, calendering, and embossing occupations
584 Mercerizing, coating, and laminating occupations
585 Singeing, cutting, shearing, shaving, and napping occupations
586 Felting and fulling occupations
587 Brushing and shrinking occupations
589 Occupations in processing of leather, textiles, and related products, n.e.c.

59 Processing occupations, n.e.c.
590 Occupations in processing products from assorted materials
599 Miscellaneous processing occupations, n.e.c.

MACHINE TRADES OCCUPATIONS

60 Metal machining occupations
600 Machinists and related occupations
601 Toolmakers and related occupations
602 Gear machining occupations
603 Abrading occupations
604 Turning occupations
605 Milling, shaping, and planing occupations
606 Boring occupations
607 Sawing occupations
609 Metal machining occupations, n.e.c.

61 Metalworking occupations, n.e.c.
610 Hammer forging occupations
611 Press forging occupations
612 Forging occupations, n.e.c.
613 Sheet and bar rolling occupations
614 Extruding and drawing occupations
615 Punching and shearing occupations
616 Fabricating machine occupations
617 Forming occupations, n.e.c.
619 Miscellaneous metalworking occupations, n.e.c.

62/63 Mechanics and machinery repairers
620 Motorized vehicle and engineering equipment mechanics and repairers
621 Aircraft mechanics and repairers
622 Rail equipment mechanics and repairers
623 Marine mechanics and repairers
624 Farm mechanics and repairers
625 Engine, power transmission, and related mechanics
626 Metalworking machinery mechanics
627 Printing and publishing mechanics and repairers
628 Textile machinery and equipment mechanics and repairers
629 Special industry machinery mechanics
630 General industry mechanics and repairers
631 Powerplant mechanics and repairers
632 Ordnance and accessories mechanics and repairers
633 Business and commercial machine repairers
637 Utilities service mechanics and repairers
638 Miscellaneous occupations in machine installation and repair
639 Mechanics and machinery repairers, n.e.c.

64 Paperworking occupations
640 Paper cutting, winding, and related occupations
641 Folding, creasing, scoring, and gluing occupations
649 Paperworking occupations, n.e.c.

65 Printing occupations
650 Typesetters and composers
651 Printing press occupations
652 Printing machine occupations
653 Bookbinding-machine operators and related occupations
654 Typecasters and related occupations
659 Printing occupations, n.e.c.

66 Wood machining occupations
660 Cabinetmakers
661 Patternmakers
662 Sanding occupations
663 Shearing and shaving occupations
664 Turning occupations,
665 Milling and planing occupations
666 Boring occupations
667 Sawing occupations
669 Wood machining occupations, n.e.c.

67 Occupations in machining stone, clay, glass, and related materials
670 Stonecutters and related occupations
673 Abrading occupations
674 Turning occupations
675 Planing and shaping occupations, n.e.c.
676 Boring and punching occupations
677 Chipping, cutting, sawing, and related occupations
679 Occupations in machining stone, clay, glass, and related materials, n.e.c.

68 Textile occupations
680 Carding, combing, drawing, and related occupations
681 Twisting, beaming, warping, and related occupations
682 Spinning occupations
683 Weavers and related occupations
684 Hosiery knitting occupations
685 Knitting occupations, except hosiery
686 Punching, cutting, forming, and related occupations
687 Tufting occupations
689 Textile occupations, n.e.c.

69 Machine trades occupations, n.e.c.
690 Plastics, synthetics, rubber, and leather working occupations
691 Occupations in fabrication of insulated wire and cable
692 Occupations in fabrication of products from assorted materials
693 Modelmakers, patternmakers, and related occupations
694 Occupations in fabrication of ordnance, ammunition, and related products, n.e.c.
699 Miscellaneous machine trades occupations, n.e.c.

BENCHWORK OCCUPATIONS

70 Occupations in fabrication, assembly, and repair of metal products, n.e.c.
700 Occupations in fabrication, assembly, and repair of jewelry, silverware, and related products
701 Occupations in fabrication, assembly, and repair of tools, and related products
703 Occupations in assembly and repair of sheetmetal products, n.e.c.
704 Engravers, etchers, and related occupations
705 Filing, grinding, buffing, cleaning, and polishing occupations, n.e.c.
706 Metal unit assemblers and adjusters, n.e.c.
709 Miscellaneous occupations in fabrication, assembly, and repair of metal products, n.e.c.

71 Occupations in fabrication and repair of scientific, medical, photographic, optical, horological, and related products
710 Occupations in fabrication and repair of instruments for measuring, controlling, and indicating physical characteristics
711 Occupations in fabrication and repair of optical instruments
712 Occupations in fabrication and repair of surgical, medical, and dental instruments and supplies
713 Occupations in fabrication and repair of ophthalmic goods
714 Occupations in fabrication and repair of photographic equipment and supplies
715 Occupations in fabrication and repair of watches, clocks, and parts
716 Occupations in fabrication and repair of engineering and scientific instruments and equipment, n.e.c.

719 Occupations in fabrication and repair of scientific and medical apparatus, photographic and optical goods, horological, and related products, n.e.c.

72 Occupations in assembly and repair of electrical equipment

720 Occupations in assembly and repair of radio and television receiving sets and phonographs
721 Occupations in assembly and repair of motors, generators, and related products
722 Occupations in assembly and repair of communications equipment
723 Occupations in assembly and repair of electrical appliances and fixtures
724 Occupations in winding and assembling coils, magnets, armatures, and related products
725 Occupations in assembly of light bulbs and electronic tubes
726 Occupations in assembly and repair of electronic components and accessories, n.e.c.
727 Occupations in assembly of storage batteries
728 Occupations in fabrication of electrical wire and cable
729 Occupations in assembly and repair of electrical equipment, n.e.c.

73 Occupations in fabrication and repair of products made from assorted materials

730 Occupations in fabrication and repair of musical instruments and parts
731 Occupations in fabrication and repair of games and toys
732 Occupations in fabrication and repair of sporting goods
733 Occupations in fabrication and repair of pens, pencils, and office and artists' materials, n.e.c.
734 Occupations in fabrication and repair of notions
735 Occupations in fabrication and repair of jewelry, n.e.c.
736 Occupations in fabrication and repair of ordnance and accessories
737 Occupations in fabrication of ammunition, fireworks, explosives, and related products
739 Occupations in fabrication and repair of products made from assorted materials, n. e. c.

74 Painting, decorating, and related occupations

740 Painters, brush
741 Painters, spray
742 Staining, waxing, and related occupations
749 Painting, decorating, and related occupations, n.e.c.

75 Occupations in fabrication and repair of plastics, synthetics, rubber, and related products

750 Occupations in fabrication and repair of tires, tubes, tire treads, and related products
751 Laying out and cutting occupations, n.e.c.
752 Fitting, shaping, cementing, finishing, and related occupations, n.e.c.
753 Occupations in fabrication and repair of rubber and plastic footwear
754 Occupations in fabrication and repair of miscellaneous plastics products
759 Occupations in fabrication and repair of plastics, synthetics, rubber, and related products, n.e.c.

76 Occupations in fabrication and repair of wood products

760 Bench carpenters and related occupations
761 Occupations in laying out, cutting, carving, shaping, and sanding wood products, n.e.c.
762 Occupations in assembling wood products, n.e.c.
763 Occupations in fabrication and repair of furniture, n.e.c.
764 Cooperage occupations
769 Occupations in fabrication and repair of wood products, n.e.c.

77 Occupations in fabrication and repair of sand, stone, clay, and glass products

770 Occupations in fabrication and repair of jewelry, ornaments, and related products
771 Stone cutters and carvers
772 Glass blowing, pressing, shaping, and related occupations, n.e.c.
773 Occupations in coloring and decorating brick, tile, and related products
774 Occupations in fabrication and repair of pottery and porcelain ware
775 Grinding, filing, polishing, frosting, etching, cleaning, and related occupations, n.e.c.
776 Occupations in fabrication and repair of asbestos and polishing products, abrasives, and related materials
777 Modelmakers, patternmakers, moldmakers, and related occupations
779 Occupations in fabrication and repair of sand, stone, clay, and glass products, n.e.c.

78 Occupations in fabrication and repair of textile, leather, and related products

780 Occupations in upholstering and in fabrication and repair of stuffed furniture, mattresses, and related products
781 Laying out, marking, cutting, and punching occupations, n.e.c.
782 Hand sewers, menders, embroiders, knitters, and related occupations, n.e.c.
783 Fur and leather working occupations
784 Occupations in fabrication and repair of hats, caps, gloves, and related products
785 Tailors and dressmakers
786 Sewing machine operators, garment
787 Sewing machine operators, nongarment
788 Occupations in fabrication and repair of footwear
789 Occupations in fabrication and repair of textile, leather, and related products, n.e.c.

79 Bench work occupations, n.e.c.

790 Occupations in preparation of food, tobacco, and related products, n.e.c.
794 Occupations in fabrication of paper products, n.e.c.
795 Gluing occupations, n.e.c.

STRUCTURAL WORK OCCUPATIONS

80 Occupations in metal fabricating, n.e.c.

800 Riveters, n.e.c.
801 Fitting, bolting, screwing, and related occupations
804 Tinsmiths, coppersmiths, and sheet metal workers
805 Boilermakers
806 Transportation equipment assemblers and related occupations
807 Body workers, transportation equipment
809 Miscellaneous occupations in metal fabricating, n.e.c.

81 Welders, cutters, and related occupations

810 Arc welders and cutters
811 Gas welders
812 Resistance welders
813 Brazing, braze-welding, and soldering occupations
814 Solid state welders
815 Electron-beam; electroslag; thermit; induction; and laser-beam welders
816 Thermal cutters and arc cutters
819 Welders, cutters, and related occupations, n.e.c.

82 Electrical assembling, installing, and repairing occupations

820 Occupations in assembly, installation, and repair of generators, motors, accessories, and related powerplant equipment
821 Occupations in assembly, installation, and repair of transmission and distribution lines and circuits
822 Occupations in assembly, installation, and repair of wire communication, detection and signaling equipment
823 Occupations in assembly, installation, and repair of electronic communication, detection, and signaling equipment
824 Occupations in assembly, installation, and repair of lighting equipment and building wiring, n.e.c.
825 Occupations in assembly, installation, and repair of transportation and materials handling equipment, n.e.c.
826 Occupations in assembly, installation, and repair of industrial apparatus, n.e.c.
827 Occupations in assembly, installation, and repair of large household appliances and similar commercial and industrial equipment
828 Occupations in fabrication, installation, and repair of electrical and electronics products, n.e.c.

829 Occupations in installation and repair of electrical products, n.e.c.

84 Painting, plastering, waterproofing, cementing, and related occupations

840 Construction and maintenance painters and related occupations
841 Paperhangers
842 Plasterers and related occupations
843 Waterproofing and related occupations
844 Cement and concrete finishing and related occupations
845 Transportation equipment painters and related occupations
849 Painting, plastering, waterproofing, cementing, and related occupations, n.e.c.

85 Excavating, grading, paving, and related occupations

850 Excavating, grading, and related occupations
851 Drainage and related occupations
853 Paving occupations, asphalt and concrete
859 Excavating, grading, paving, and related occupations, n.e.c.

86 Construction occupations, n.e.c.

860 Carpenters and related occupations
861 Brick and stone masons and tile setters
862 Plumbers, gas fitters, steam fitters, and related occupations
863 Asbestos and insulation workers
864 Floor laying and finishing occupations
865 Glaziers and related occupations
866 Roofers and related occupations
869 Miscellaneous construction occupations, n.e.c.

89 Structural work occupations, n.e.c.

891 Occupations in structural maintenance, n.e.c.
899 Miscellaneous structural work occupations, n.e.c.

MISCELLANEOUS OCCUPATIONS

90 Motor freight occupations

900 Concrete-mixing-truck drivers
902 Dump-truck drivers
903 Truck drivers, inflammables
904 Trailer-truck drivers
905 Truck drivers, heavy
906 Truck drivers, light
909 Motor freight occupations, n.e.c.

91 Transportation occupations, n.e.c.

910 Railroad transportation occupations
911 Water transportation occupations
912 Air transportation occupations
913 Passenger transportation occupations, n.e.c.
914 Pumping and pipeline transportation occupations
915 Attendants and servicers, parking lots and automotive service facilities
919 Miscellaneous transportation occupations, n.e.c.

92 Packaging and materials handling occupations

920 Packaging occupations
921 Hoisting and conveying occupations
922 Occupations in moving and stowing materials and products, n.e.c.
929 Packaging and materials handling occupations, n.e.c.

93 Occupations in extraction of minerals

930 Earth boring, drilling, cutting, and related occupations
931 Blasting occupations
932 Loading and conveying operations
933 Crushing occupations
934 Screening and related occupations
939 Occupations in extraction of minerals, n.e.c.

95 Occupations in production and distribution of utilities

950 Stationary engineers
951 Fixers and related occupations
952 Occupations in generation, transmission, and distribution of electric light and power
953 Occupations in production and distribution of gas
954 Occupations in filtration, purification, and distribution of water
955 Occupations in disposal of refuse and sewage
956 Occupations in distribution of steam
959 Occupations in production and distribution of utilities, n.e.c.

96 Amusement, recreation, motion picture, radio and television occupations, n.e.c.

960 Motion picture projectionists
961 Models, stand-ins, and extras, n.e.c.
962 Occupations in motion picture, television, and theatrical productions, n.e.c.
969 Miscellaneous amusement and recreation occupations, n.e.c.

97 Occupations in graphic art work

970 Art work occupations, brush, spray, or pen
971 Photoengraving occupations
972 Lithographers and related occupations
973 Hand compositors, typesetters, and related occupations
974 Electrotypers, stereotypers, and related occupations
976 Darkroom occupations,n.e.c.
977 Bookbinders and related occupations
979 Occupations in graphic art work, n.e.c.

APPENDIX F

"Skeleton" Questionnaire for Respondents

c. Conditions of Trainees

Area of Handicap	/ Level of Handicap		
	Mild	Moderate	Severe
(1) Physical	01	02	03
(2) Cognitive	04	05	06
(3) Visual	07	08	09
(4) Auditory	10	11	12
(5) Emotional	13	14	15
(6) Speech	16	17	18
(7) Multiple	19	20	21

3. Description of Training Conducted

Note: The respondent reads the descriptions of on-the-job training (OJT) and formal technical training - classroom/laboratory (CL) and chooses the most accurate description for the type of training provided including a "combination" (COMB) when both types of training are used. Select only one type of training, i.e., OJT, CL, or COMB.

Definitions:

"On-the-job training" (OJT) encompasses all self-study knowledge and job experience acquired by a trainee while working at his or her assigned job.

"Formal technical training" (CL) is traditional or conventional classroom or laboratory instruction in which the instructor and student regularly meet at a specific time and place for the primary purpose of teaching and learning.

The objective of both of these methods of training is assumed to be the mastery by the trainee of specific knowledges and skills needed on a job. In OJT the teaching and learning usually has a lower priority than producing goods or services, and in CL the production of goods and services always has lower priority than does teaching and learning (Evans, Holter, and Stern, 1976).

☐ AM

Time interview began: _____ ☐ PM

4. Training Provided (circle ONLY one)

a. Type of training provided?

comment(s) _____

_____

_____

b. What is the training designed to accomplish?

comment(s) _____

_____

_____

c. Training leads

to entry level performance on a specific job. . . . . .

to greater responsibility (progression) on a specific job . . .

to entry level and to greater responsibility on a specific job.

to transfer to a related occupation . . . . . .

comment(s) _____

_____

_____

d. Training is designed for employment

on the same job and for the same employer . . . . . .

in the same occupation, with the same employer, but different job setting . . . . . .

in the same occupation but different employer . . . . . .

all of the above. . . . . .

comment(s) _____

_____

_____

e. Is training given by a person who has considerable experience in the occupation being taught?

comment(s) _____

_____

_____

f. The training is provided by

the training station employer?

the eventual employer?

both of the above?

comment(s) _____

_____

_____

g. Does the method of training require written materials for the trainee to study?

comment(s) _____

_____

_____

5. Institutional Criteria

a. Cost:

(1) The average cost of training one graduate is

(2) The training method which is the least cost-effective is

(3) With adequate financial support the most cost-effective training can best be accomplished using

(4) Existing financial constraints encourage the use of

comment(s) _____

_____

_____

b. Capability:

(1) The number of qualified applicants for each vacant position on the training staff is

(2) The most capabable instructors for training personnel to accomplish tasks are usually found in

comment(s) _____

_____

_____

c. Philosophy and Policy:

(1) The expectations of your administrator for the success of your training program are Low Med. High Unk.

(2) Based on the policy of your organization the type of training preferred is

comment(s) _____

_____

_____

d. Availability/Suitability of Physical Resources:

(1) What percent of the equipment and/or facilities used by the trainee are typical or identical to those they will encounter on the job?

(2) The use of actual job conditions is usually more feasible in

comment(s) _____

_____

_____

e. Reality of Atmosphere:

(1) Trainees are trained in a work atmosphere (i.e., breaks, work shifts, etc.) that is typical or identical to the conditions of the actual job

(2) Realism of training can best be created with

comment(s) _____

_____

_____

f. Screening Device:

(1) What percentage of trainees are required to complete screening (e.g., security check, physical-psychological exams, etc.) before being allowed to complete/graduate from the program?

(2) The use of training as a screening device for both hiring and promotion can best be accomplished through

comment(s) _____

_____

_____

g. History and Pragmatism:

(1) Consider the following definitions:

(a) Tradition means "we've always done it this way."

(b) Data means "research indicates that this is the most efficient way to do it."

(2) An organization which usually uses OJT tends to choose that method of training on the basis of

(3) An organization which usually uses CL tends to choose that method of training on the basis of

(4) An organization which usually uses a COMB tends to choose that method of training on the basis of

comment(s) _____

_____

_____

h. Evaluation of Training:

An appraisal of the quality of training can most economically be assessed in

comment(s) _____

_____

_____

135 Deck 2

6. Quality and Speed Related Criteria

a. Number of Trained Personnel Required:

(1) The largest number of personnel (of all types) actually in training at one time on your site is

(2) A large flow of trainees can best be trained through

comment(s) _____

_____

_____

b. Persistence of Demand for Trained Personnel:

(1) Trained personnel for jobs in this occupational category will be needed for

(2) The average annual requirement for trained personnel to fill jobs in this occupational category is

(3) A substantial demand for this job skill has existed for

(4) When trained personnel are required in the job market over an extended period of time, the best method of training is

comment(s) _____

_____

_____

c. Need to Minimize Training Time:

(1) The average number of months to train a trainee is

(2) When time for training is short, best results can be obtained via

comment(s) _____

_____

_____

d. State of the Business Cycle:

(1) The percent of trained personnel earning a competitive wage within 12 months after completion of the training received in your program is

(2) When the demand for workers is high in this occupation, training for it can best be supplied through

comment(s) _____

_____

_____

7. Job Related Criteria

a. Frequency:

(1) In choosing tasks to be taught in a training program it is usual to teach tasks which are performed in a job by almost all workers and not to teach tasks which workers rarely perform.

(2) What percent of tasks taught in your program are performed on-the-job by the average graduate?

(3) Tasks which are performed on-the-job by graduates at least once every week are best taught by

comment(s) _____

_____

_____

b. Criticality:

(1) The percent of tasks in your training program that involves risk to or the safety of your trainees, equipment, or facilities is

(2) Skills involving high risk may be best acquired through

comment(s) _____

_____

_____

c. Uniformity:

(1) The importance of having a task performed uniformly, i.e., in exactly the same way by <u>all</u> trainees is

Unimportant Borderline Important Unknown

(2) Greater uniformity of trainee job/task performance can best be attained through

comment(s) _____

_____

_____

d. Complexity:

(1) The average number of days required for a trainee to learn a complex task to acceptable quality standards is

(2) The method of training best suited for teaching complex tasks is

(3) If the job is relatively easy to learn, the skill can best be developed through

comment(s) _____

_____

_____

e. Judgement of Performance of Graduates:

(1) Assuming that graduates of this program are receiving a competitive wage upon employment,

(a) how many months after employment are handicapped graduates usually promoted to a higher status job?

(b) what percentage of all graduates are promoted to a higher status job after cited period above?

(c) what percentage of handicapped graduates receiving OJT are promoted to a higher status job after cited period above?

(d) what percentage of handicapped graduates receiving CL are promoted to a higher status job after cited period above?

(e) what percentage of handicapped graduates receiving COMB are promoted to a higher status job after cited period above?

(2) Which training method produces the most competent employees after cited period above?

comment(s) _____

_____

_____

f. Passage of Time:

(1) What percentage of trainees who have completed training are retained in the training program because an actual job is not readily available?

(2) The usual time interval between completion of the training program and actual job placement is

(3) An unacceptable loss of potential job efficiency occurs when the time interval between graduation and actual job entry exceeds a given period of time. The loss of job efficiency for your graduates occurs after

(4) What percentage of graduates have experienced this loss of job efficiency?

(5) What percentage of skills require retraining because of this time interval?

(6) Graduates do not require (or seldom require) retraining because of this time interval, when they receive training via

comment(s) _____

g. Instrumentality:

(1) The percent of tasks that your graduates will be expected to perform that require skills in reading, computing, and/or speaking is

(2) Job tasks which require basic educational skills are best taught through

comment(s) _____

_____

_____

h. Quality Control:

(1) The average time required for a trainee to learn to produce work of acceptable quality using the OJT method is

using the CL method is

using the COMB method is

(2) Training for producing work of acceptable quality in your agency is

Difficult Borderline Easy Unknown

comment(s) _____

_____

_____

1. Ports of Entry:

(1) In which jobs for which you provide training is the trainees entry into the job controlled by a licensing board or agency?

(2) For each such job does the agency regulate the amount of training required for job entry?

(3) If an agency specifies the type of training, which do they specify for each job?

comment(s) _____

_____

_____

8. Trainee Background Criteria

a. Preferred Learning Method(s):

(1) Which training method is preferred by the trainees for learning the skills of the job?

(2) Which training method have you preferred for learning the skills of your job?

comment(s) _____

_____

_____

b. Disabilities:

(1) Trainees with physical skill deficits can learn to master tasks better through

(2) Trainees with cognitive skill deficits can learn to master tasks better through

(3) Trainees with visual deficits can learn to master tasks better through

(4) Trainees with auditory deficits can learn to master tasks better through

(5) Trainees with multiple deficits can learn to master tasks better through

comment(s) _____

_____

_____

c. Abilities and Aptitudes:

(1) Trainees who acquire skills slowly can be best trained to perform tasks of this job through

comment(s) _____

_____

_____

d. Prior Experience:

(1) The percent of job relevant task performance behaviors which the "average" trainee has before entering

(2) Trainees that have these pre-training performance behaviors can best be trained through

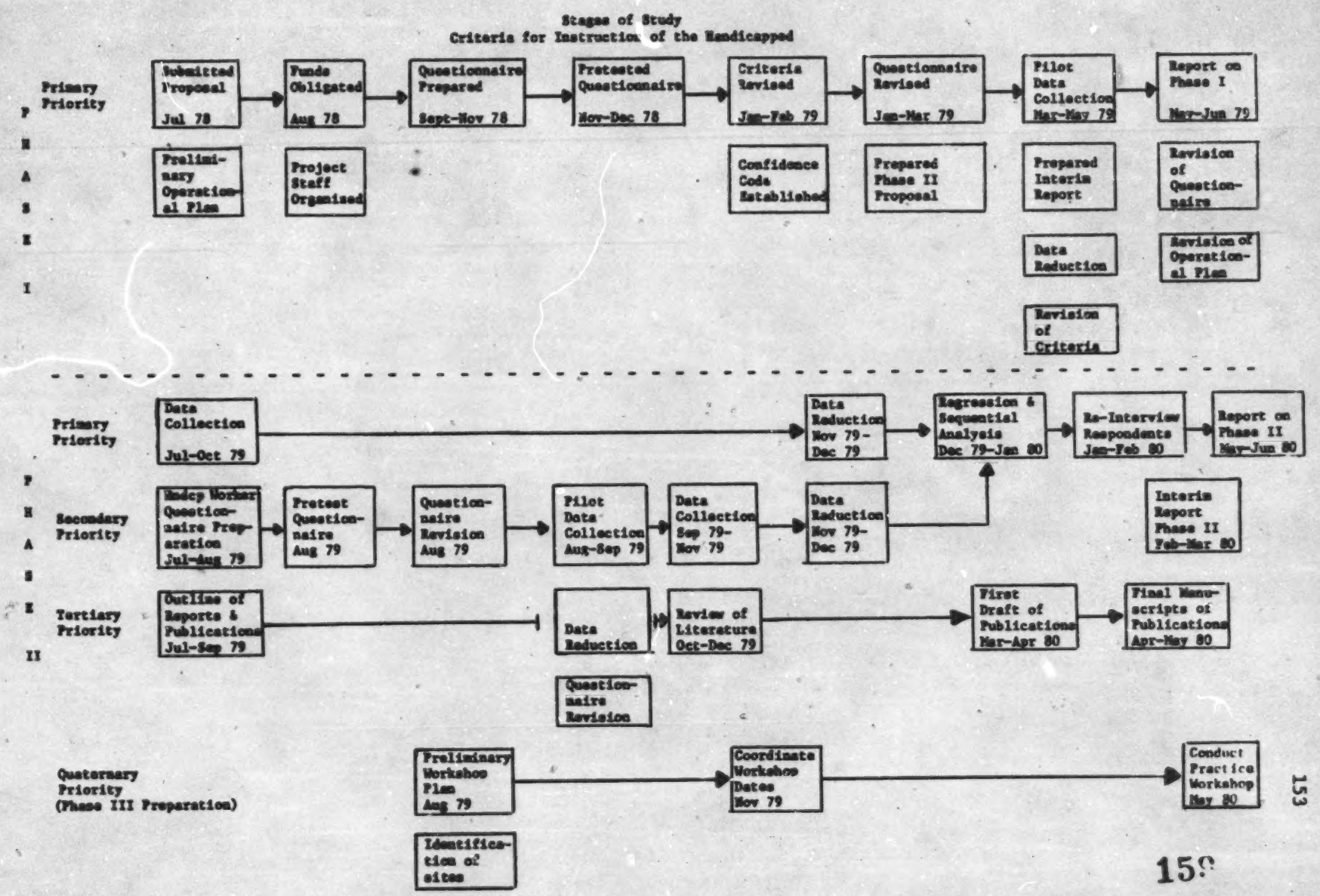
comment(s) _____

_____

_____

APPENDIX G

Stages of Study


Stages of Study
Criteria for Instruction of the Handicapped
PHASE I
Primary Priority
Submitted Proposal Jul 78
Funds Obligated Aug 78
Questionnaire Prepared Sept-Nov 78
Pretested Questionnaire Nov-Dec 78
Criteria Revised Jan-Feb 79
Questionnaire Revised Jan-Mar 79
Pilot Data Collection Mar-May 79
Report on Phase I May-Jun 79
Preliminary Operational Plan
Project Staff Organized
Confidence Code Established
Prepared Phase II Proposal
Prepared Interim Report
Revision of Questionnaire
Data Reduction
Revision of Operational Plan
Revision of Criteria
PHASE II
Primary Priority
Data Collection Jul-Oct 79
Data Reduction Nov 79-Dec 79
Regression & Sequential Analysis Dec 79-Jan 80
Re-Interview Respondents Jan-Feb 80
Report on Phase II May-Jun 80
Secondary Priority
Hndcp Worker Questionnaire Preparation Jul-Aug 79
Pretest Questionnaire Aug 79
Questionnaire Revision Aug 79
Pilot Data Collection Aug-Sep 79
Data Collection Sep 79-Nov 79
Data Reduction Nov 79-Dec 79
Interim Report Phase II Feb-Mar 80
Tertiary Priority
Outline of Reports & Publications Jul-Sep 79
Data Reduction
Review of Literature Oct-Dec 79
First Draft of Publications Mar-Apr 80
Final Manuscripts of Publications Apr-May 80
Questionnaire Revision
Quaternary Priority (Phase III Preparation)
Preliminary Workshop Plan Aug 79
Coordinate Workshop Dates Nov 79
Conduct Practice Workshop May 80
Identification of sites